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Sculpting NICU Scriptures on Mamalla Shores

ABSTRACT BOOK

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AWARD PAPER

NNF GOLD MEDAL AWARD PAPER

1. **Initiation of enteral feeding as per current protocol (at 24 hours) versus as per clinical status (from 6 hours onwards) in neonates born with antenatal reversed end diastolic flow (REDF) in the umbilical artery Doppler: a randomized controlled trial**

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Introduction: Neonates with reversed end diastolic flow (REDF) are at higher risk of feed intolerance (FI) and necrotizing enterocolitis (NEC), leading to delayed feeding. Early enteral nutrition may benefit these neonates by reducing complications associated with parenteral nutrition and hence early discharge.

Aims & Objectives: The aim was to assess the incidence of FI and NEC (primary outcomes) if feeding was initiated as per current protocol (24 hours) versus as per clinical status (from 6 hours onwards) in neonates with REDF if abdominal examination is normal. Secondary outcomes were time to reach full feeds, sepsis, mortality and days of hospital stay.

Materials and Methods: In this randomized controlled trial, consecutively born 52 neonates with REDF were enrolled and randomized into two groups: Group A (n=26, feeds started at 6 hours) and Group B (n=26, feeds started at 24 hours). Neonates were monitored for FI, NEC and other complications until discharge. Kaplan–Meier survival analysis was used to represent the time to reach full feeds.

Results: FI was observed in 14 (54%) neonates in 6 hours group and 17 (65%) in 24 hours group (p=0.572), with similar NEC rates [1 (4%) and 2 (8%) respectively, p=1.000].

Neonates in the 6 hours group achieved full feeds faster (median 8 vs. 11 days, p=0.060) and had shorter hospital stay (median 17 vs. 32 days, p=0.020). Rates of death and sepsis were similar.

Conclusion: Early initiation of enteral feeding in neonates with REDF did not increase the risk of FI or NEC and other outcomes were similar.

Keywords: Reverse end diastolic flow**,** feed intolerance, necrotizing enterocolitis, early feeding

2. NEURODEVELOPMENTAL OUTCOME OF NEONATES (≥35 WEEKS) REQUIRING POSITIVE PRESSURE VENTILATION AT BIRTH, WITH NO OR MILD ENCEPHALOPATHY

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Introduction: Perinatal asphyxia is a major cause of neonatal mortality in India. Recent studies suggest that even neonates with mild encephalopathy are at risk for long-term neurodevelopmental impairment.

Aim: This prospective cohort study aimed to assess the neurodevelopmental outcomes of neonates who required positive pressure ventilation (PPV) at birth, focusing on those with no or mild encephalopathy.

Methods: Conducted at a tertiary care hospital in South India between August 2021 and October 2023, the study enrolled 100 neonates >35 weeks gestation who required PPV at birth, along with birth weight- and gestational age-matched controls who did not require resuscitation. Neurodevelopmental assessments were performed at 12-18 months using the Bayley Scales of Infant Development (Bayley 4).

Results: Of the 100 neonates in each group, 81 from the PPV group and 80 from the no PPV group were followed up. Baseline characteristics were comparable. The mean gestational age and weight were 38.3 ± 1.1 weeks and 2860 ± 421.7 g, respectively. Statistically significant differences were found in the language score (MD 3.9, CI 1.2-6.5, $p < 0.004$) and motor score (MD 2.8, CI 1.2-5.6, $p = 0.04$). Mild hypoxic-ischemic encephalopathy (HIE) was associated with significant language impairment. PPV duration >1 minute was associated with mild HIE (OR 7.2, CI 4.2-40.4). Secondary outcomes included delayed breastfeeding initiation and increased respiratory issues.

Conclusion: Neonates needing PPV at birth are at risk for adverse neurodevelopmental outcomes, even with no or mild encephalopathy, highlighting the need for early follow-up and intervention.

Key words: Positive pressure ventilation at birth, Mild Hypoxic ischemic encephalopathy, Neurodevelopment, Language and motor impairment.

3. Physiological-based versus fixed time point based delayed cord clamping in healthy term infants born vaginally: A triple arm randomized controlled trial

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Introduction

Delayed cord clamping (DCC) is the standard of care among healthy term infants however, the ideal timing of DCC is not known and varies from as low as 30-60 seconds till as high as placental separation.

Aims and Objectives

We aimed at comparing effect of Physiological-based cord clamping [PBCC] approach with fixed-timepoint based DCC on preductal oxygen saturation(SpO_2).

Materials and Methods

It was an open-label triple arm RCT whereby the pre-ductal SpO_2 of first 10 minutes of life was compared at three different time-points of delayed cord clamping (group1: PBCC i.e cord being clamped after placental separation; group2:DCC at 1-minute; group3:DCC at 3-minutes of life) among term healthy infants born vaginally. Masimo pulse oximeter with Signal ExtractionTechnology were used which were set at two-seconds averaging-interval with maximal sensitivity. SpO_2 was compared among the three groups and percentile curves were generated.

Results

A total of 728 infants contributed to the three groups (group1:n=242, group2:n=248, group3:n=238) after excluding missing data. The mean SpO_2 was significantly higher in PBCC group as compared to 1-minute or 3-minute groups with values being higher by 1-7% in first 10 minutes of life with maximal difference at 3rd minute of life ($p<0.05$). However, there was no significant difference between group 2 and group 3.Time to reach 90% SpO_2 was significantly shorter in PBCC group($p<0.05$).The practice of PBCC was safe with no significant infant or maternal adverse event.

Conclusions

PBCC resulted in significantly higher SpO_2 as compared to fixed-time point based DCC with no significant adverse events**.**

Key words: Physiological based cord clamping, fixed time point based cord clamping, oxygen saturation, delayed cord clamping, percentile curves.

NNF SOCIAL NEONATOLOGY AWARD PAPER

1. Impact Of Timing Of Initiation Of Skin-to-skin Contact After Cesarean Section On Exclusive Breastfeeding Rates At 6 Weeks Among Healthy Term Newborns: An Open-Label, Randomized Controlled Trial

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Introduction: Skin-to-skin contact (SSC) is recommended by BHFI and WHO immediately after birth. However, neonates delivered by Cesarean section often face barriers to immediate SSC.

Aims and Objectives: To compare the effect of SSC initiation at three different time points on exclusive breastfeeding (EBF) rates at 6 weeks among healthy term infants delivered via Cesarean-section.

Material and Methods: This open-label RCT was conducted at a tertiary hospital from January 2023 to May 2024, among healthy-term infants born via cesarean section. The eligible infants were assigned to three groups: Group 1 (Immediate SSC in the delivery room), Group 2 (SSC after transfer to the recovery room), and Group 3 (Breastfeeding initiation followed by SSC in the recovery room). The primary outcome was the percentage of mothers exclusively breastfeeding at 6 weeks. Secondary outcomes included SSC duration, mother-infant bonding scores (MIBS), early initiation of breastfeeding (EIBF) rates and incidence of hypothermia.

Results: The baseline characteristics were similar among 750 enrolled infants (250 in each group). In the immediate SSC group, 46 neonates (18.4%) faced challenges in initiating SSC and were reallocated to another group. There was no significant difference in the EBF rates at 6 weeks. The MIBS scores were similar. The longest median SSC duration (65 minutes) and highest EIBF rate (92.1%) were observed in the breastfeeding first followed by SSC group *($p<0.001$)*. The incidence of hypothermia was significantly higher (52.4%) in the immediate SSC group*($p<0.001$)*.

Conclusion: SSC during C-sections faces challenges such as safety concerns, staffing issues, and maternal discomfort. While essential, intraoperative immediate SSC may not always be feasible. Therefore, initiating SSC in the recovery room with family support is a practical and effective alternative.

Keywords: Newborn, Skin-to-skin contact, Caesarean Section, Exclusive breastfeeding, Early initiation of Breastfeeding, Hypothermia

2. Comparison of maternal facilitated tucking versus nurse facilitated tucking for alleviation of pain during neonatal heel lancing: a randomized, cross-over trial.

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Purpose: To compare maternal facilitated-tucking (MT) with nurse facilitated-tucking (NT) for pain alleviation following heel lancing in preterm neonates.

Methods: Randomized, cross-over trial in 45 preterm (≤35 weeks) neonates undergoing heel lancing in the NICU. Random allocation of sequence of tucking to MT followed by NT (AB sequence) or vice versa (BA sequence). Mothers were pre-trained in facilitated tucking (FT) in a simulated environment. Primary outcome: Premature Infant Pain Profile – Revised (PIPP-R) score during heel lancing. Blinded PIPP-R scoring done by independent experts.

Results: Study neonates had significantly lower PIPP-R score following MT compared to NT (10.1 (2.9) versus. 11.8 (2.8); MD (95% C.I): -1.7 (-0.6, -2.8); p=0.003). No period effect and carry-over effect were observed. Maternal confidence and parenting-self-efficacy scores were significantly higher, and stress levels were significantly lower in mothers post-training for FT.

Conclusion: Mothers performing tucking before heel lancing is better than nurse tucking for pain relief in preterm neonates.

Keywords- Preterm neonate, facilitated tucking, heel lance, PIPP-R, confidence level, perceived maternal parenting-self-efficacy.

3. Use of WHO quality assessment/ quality improvement tool for gap analysis and POCQI methodology to improve Preterm Neonatal outcomes at a tertiary care centre: A Quality Improvement Initiative

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Introduction: Preterm birth is a leading cause of neonatal mortality and morbidity globally. Evidence suggests that over three-quarters of premature deaths can be prevented through cost-effective interventions. However, compliance with evidence-based guidelines in neonatal care settings often falls below 50%, even in well-resourced settings. This gap can be bridged with improving the adherence to good clinical practices in order to improve the outcomes in preterm neonates.

Aims and objectives: The study evaluated the system gaps related to adherence with evidence-based practices pertaining to preterm neonates using WHO tool and implemented POCQI methodology to improve and sustain the composite outcome of mortality and/or major morbidities, including bronchopulmonary dysplasia, necrotizing enterocolitis stage 3, late-onset sepsis, and intraventricular hemorrhage grades 3 and above.

Materials and methods: The study was conducted over 14 months, using the adapted WHO Quality Assessment/Quality Improvement Tool for Maternal and Newborn Care to identify care gaps in a neonatal unit in New Delhi, India. Point of Care Quality Improvement methodology was employed to focus on key clinical practices namely kangaroo mother care, the use of mother's own milk, and antibiotic usage, utilizing multiple PDSA cycles.

Results: The WHO tool evaluated the adherence to clinical practices and showed gaps in key areas of care namely kangaroo mother care, MOM usage and antibiotic usage. Amongst 961 preterm neonates enrolled, the proportion of mothers providing kangaroo mother care rose from 70.25% to 85.58%, and exclusive use of mother's own milk by day 7 increased from 59.24% to 70.2%. Antibiotic use declined from 25.5% to 20.67%. While process improvements were noted, the composite outcome of mortality and major morbidities did not show statistically significant reduction, though a downward trend was observed post-intervention.

Conclusion: This study demonstrates the feasibility of using WHO QA/QI tool by trained personnel for gap analysis. POCQI is an important approach to enhance evidence-based care practices and sustain good outcomes for preterm neonates in resource-limited settings. Longer follow-up may be needed to observe significant improvements in clinical outcomes.

ORAL / FREE PAPERS

1. Effect of Structured Oromotor Stimulation by Mother of Preterm Neonates (≤32 weeks) on Time to Reach Full Katori Spoon Feeds - A Randomized Controlled Trial

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Introduction- Preterm neonates frequently experience oral feeding difficulties due to multiple causes related to immaturity. OMS (Oromotor stimulation) has been tried in past to overcome these roadblocks to oral feeds. However, there is dearth of studies involving parents as intervention providers.

Aims and Objectives-To compare the time taken to reach full KS (Katori spoon) feeds from OG (Orogastric feeds) in preterm neonates (≤32 weeks) receiving structured OMS as compared to those receiving standard care. The secondary objectives were to compare the feeding performance (proficiency, efficiency and overall volume transfer), duration of hospital stay, weekly weight gain, time to achieve partial/complete breastfeeds and adverse events.

Material and methods: In this open-label randomized control trial, neonates were randomly allocated in a 1:1 ratio to intervention and standard groups. Mothers were trained to give the intervention for 2 minutes three times a day starting from the day the neonate accepted OG feeds of 100 mL/kg till the attainment of full KS feeds.

Results: Out of 84 enrolled neonates,79 were included in the final analysis. The median (IQR) time (days) to attain full KS feeds was 20 (14-26) days in the intervention group as compared to 20 (13-37) days in the control group. The secondary outcomes like feeding performance as assessed by proficiency, efficiency and overall volume transfer were similar in the two groups. Also, other parameters like duration of hospital stay, weekly weight gain and breastfeeding outcomes were not significantly different.

Conclusion: OMS didn't result in early attainment of oral feeds in preterm neonates in our study. Also, benefits in terms of a shorter hospital stay, better weight gain or better breastfeeding outcomes could not be established.

2. "Breathe my Baby": Impact of Tele - Kangaroo Mother Care (KMC) clinics on the respiratory outcomes of newborns admitted to Special Newborn Care Unit (SNCU)

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Purpose:

Kangaroo Mother Care (KMC) is a cost-effective and skilled practice that has been shown to improve outcomes for premature and low birth weight babies. It has many benefits like weight gain, improved neurological and respiratory health, better bonding, and reduced mortality. However, KMC is not widely used in remote areas, where telehealth may be the only option for healthcare. This study aims to assess the respiratory outcomes of newborns receiving KMC in remote units of Chhattisgarh, India by providing telementoring to medical staff and parents.

Methods:

In 2022, this comparative study was carried out at one SNCU in Chhattisgarh, India. The study consisted of gathering data before intervention and utilizing video call technology for remote mentoring to encourage KMC among both staff and parents. Quality improvement initiatives were executed under supervision. Subsequently, data on mortality and morbidity was collected and compared with pre-intervention data.

Results

The KMC rate increased from 4.5% to 100% by the end of 2022 and remained consistent in 2023. The median latency for starting KMC decreased to 0 days. 61.4% of babies who received KMC had long KMC for more than 8 hours. Oxygen usage dropped from 93.4% to 39.8%. The median days of respiratory support decreased from 3 days to 0 days. The incidence of apnoea reduced from 30.3% to 13%. Total adverse outcomes (death, LAMA and referral) reduced from 35.8% (n=95) to 18.3% (n=62) ($p<0.05$) [Relative Risk (RR): 0.51; 95% Confidence Interval (CI): 0.39-0.67]

Conclusions

Using telemedicine technology for promotion and maintenance of KMC is an effective approach to decrease the mortality rate, morbidity rate, and overall cost of care for newborns who are admitted to SNCUs located remotely.

3. **Nasal Intermittent Positive Pressure Ventilation vs Free Flow Oxygen during neonatal intubation**

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Introduction Endotracheal intubation is life-saving but a technically challenging procedure which carries meaningful risk in children and infants. Only few studies have reported rates and types of adverse events associated with it. Currently majority of the neonatal intensive care units (NICUs) use Free Flow Oxygen (FFO) to prevent hypoxia while intubation. Nasal Intermittent Positive Pressure Ventilation (NIPPV) is now routinely used in NICUs but its role during intubation is still not evaluated.

Aim and Objectives To compare adverse events during endotracheal intubation while newborn is receiving NIPPV Vs. Free Flow Oxygen. To compare success of intubation in first attempt between the two groups.

Materials and Methods This randomized control trial took place in a tertiary care NICU from March 31, 2023, to May 13, 2024, involving neonates on CPAP requiring intubation. Neonates were randomized into two groups: FFO and NIPPV. In the FFO group, CPAP was replaced with free flow oxygen at 10 L/min during intubation, while the NIPPV group received NIPPV via Ram's cannula with specific ventilator settings. Intubation procedures were recorded using high-definition video. Senior residents conducted the intubations, and outcomes such as intubation efforts, time to intubate, heart rate and SpO2 were monitored.

Results Total 50 participants were enrolled in the study; 25 in each group. Mean (SD) gestational age (GA) was 33.60(4.18) weeks and 34.12(4.46) weeks; mean (SD) birth weight was 2.02(0.66) kg and 1.85(0.76) kg respectively for NIPPV and FFO groups. During intubation, bradycardia occurred in 2(12.5%) participants in the NIPPV group and 3(21.42%) in the FFO group (p=0.642). Significant desaturation occurred in 3(12%) participants of the FFO group, but none in the NIPPV group (p=0.235). The reduction in mean (SD) HR from baseline to during intubation was 16.48(24.63) vs 17.16(21.88) for NIPPV vs FFO group (p=0.92). The reduction in Mean(SD) saturation from baseline to during intubation was significantly high in FFO group [0.56(3.85) vs 4.4(5.87) for NIPPV vs FFO group (p=0.009)].Successful first-attempt intubation was achieved in 17(68%) vs 15(60%) of newborns in NIPPV and FFO group respectively (p=0.556). Intubation within 30 seconds occurred in 15(88.23%) of NIPPV and 12(80%) of FFO group (p=0.645). Mean(SD) intubation time was 27.80(14.99) seconds for NIPPV and 32.28(15.62) seconds for FFO group (p=0.306).

Conclusion NIPPV prevented hypoxemia in newborns during and after intubation as compared to FFO. Other complications, success rate and time to intubate were comparable. Further trials are warranted to explore the potential benefits of NIPPV in neonatal intubation.

4. Efficacy of Intensive Double Surface Phototherapy in Unstable Preterm Neonates with Pathological Unconjugated Hyperbilirubinemia - A Randomized Control Study.

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Introduction: Blood supply to the skin in sick neonates will be compromised, affecting the rate of fall of bilirubin under phototherapy. Limited information is available in studies undertaken globally and in India on the efficacy of intensive double surface phototherapy (DSPT) in unstable neonates.

Aims and Objectives: Compared to single surface phototherapy (SSPT), to evaluate the efficacy of DSPT in unstable preterm neonates having pathological unconjugated hyperbilirubinemia.

Materials and Methods: This randomised trial was conducted in a tertiary care neonatal unit in North India. Neonates (≥ 28 weeks and <37 weeks with postnatal age ≤ 14 days) with pathological hyperbilirubinemia and meeting any one or more of the Unstability criteria were included. The neonates were randomized to DSPT or SSPT group. DSPT group received intensive phototherapy on ventral and dorsal surfaces and SSPT group only on ventral surface of the body.

Results: A total of 48 neonates were enrolled. Baseline neonatal and maternal characteristics were comparable. The severity of Unstability was comparable in the two groups, viz, blood pH <7.15 (DSPT: n=7 and SSPT: n=5), sepsis screen/blood culture positive (DSPT:n=10/3, SSPT:n=8/2), apnea requiring CPR (n= 7 each), pressor support (DSPTn=18, SSPTn=14), and respiratory support in all the neonates. The rate of fall of total serum bilirubin (mean±SD) over initial 24 hours of phototherapy was 0.26 ± 0.02 in the DSPT group and 0.20 ± 0.02 mg/dL/h in SSPT group ($p<0.001$), with mean duration of phototherapy of 29.78 h and 29.71 h respectively.

Conclusion: In Unstable Preterm Neonates, efficacy of DSPT was higher compared to SSPT. The present study was able to achieve almost the similar rate of fall in serum bilirubin in unstable neonates while using DSPT as that in stable preterm neonates with SSPT.

Keywords: Unstable Preterm Neonates, Neonatal Hyperbilirubinemia, Double Surface Phototherapy, Single Surface Phototherapy.

5. Role of massage with virgin coconut oil-based emollient on growth, bone strength, and neurodevelopment of newborns

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Introduction: Massage with different emollients may be a useful way to reduce neonatal mortality, particularly in developing countries.

Objectives: To identify the role of massage with coconut oil-based emollient in the prevention of sepsis and hypothermia, physical growth, bone strength, and neurodevelopment in newborns.

Methods: This randomized trial was conducted between January and December, 2023. The study and control groups received massage respectively with coconut oil-based emollient and mineral oil for first 6 months of life. Primary outcome was weight gain in the newborn period. Secondary outcomes were other weight, length and head circumference gain (at 28th day, 3rd and 6th month), incidence of sepsis and hypothermia in newborn period, serum 25 hydroxy vitamin D level, and speed of sound in upper end of tibia (3rd and 6th month), and motor and mental developmental quotients at 6th month.

Results: Weight gain, length gain, and gain in head circumference were significantly higher in the study group at the 28th day, 3rd month, and 6th month. But, length gain at 6th month was not significant statistically ($P<0.05$). The incidence of hypothermia (3.5% vs. 9.9%, $P=0.02$) and sepsis (2.3% vs. 7.6%, $P=0.02$) was higher in the control group. Higher serum level of 25-hydroxy vitamin D (3rd and 6th month), higher speed of sound in tibia i.e. better bone strength (3rd and 6th months) and better neurodevelopment (6th month) were noted in the study group.

Conclusion: Massage with coconut oil-based emollient was associated with better physical growth, neurodevelopment, and bone strength in newborns.

Key-words: *Sepsis, Hypothermia, Skin, Anthropometry*

6. A Quality Improvement Initiative to Reduce the Noise Levels in a Tertiary Care Neonatal Intensive Care Unit

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Introduction: Ours is a tertiary-level 3 NICU catering to the sickest and smallest neonates. Recently, our observation has suggested that the new generation of NICU staff and residents are not sensitive to protocols of noise control and maintaining a silent environment. Hence, this QI project was undertaken.

Objective: To lower mean noise levels by 10%.

Methods: The QI team identified the potential sources of noise in the NICU through fishbone analysis in the baseline phase. Noise levels were recorded by a digital sound pressure level meter. Stepwise Plan-Do-Study-Act (PDSA) cycles were conducted over 8 weeks, and the strategies to reduce noise levels targeted behavioral and environmental modification. Further noise levels were assessed for 4 weeks in the post-intervention phase.

Results: Average noise levels decreased from the baseline 63.3 dB ± 3.09 dB to 54.3 dB ± 1.51 dB (14.2% decline) in the post-intervention phase with a significant P value (<0.0001). The peak noise levels decreased from a baseline 110.6 dB ± 2.94 dB to 76.9 dB ± 1.65 dB in the post-intervention phase with a significant P value (<0.0001). During the day shift, average noise levels decreased from 63.8 dB to 54.7dB; night shift noise levels decreased from 62.9 dB to 53.8 dB. Peak noise levels were decreased from 112dB and 108.7dB to 78.1dB and 75.7 dB during the day and night shifts respectively.

Conclusion: Effective implementation of targeted behavioral and environmental strategies through a stepwise PDSA-driven approach decreased the noise levels in the NICU by 14.2% from baseline.

7. **Dopamine versus Norepinephrine in Fluid Refractory Septic Shock among Preterm Neonates: A Double- Blind Randomized Controlled Trial**

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The aim of the present study is to compare the efficacy and safety of norepinephrine versus dopamine in achieving early (within 45 minutes of initiation) reversal of fluid refractory septic shock in preterm neonates.

A double blind randomised controlled trial was conducted in a Level-III tertiary care hospital in Northern India. Fifty neonates born at a gestational age of <37 weeks and diagnosed with fluid refractory septic shock till 28 days of life were randomly allocated to receive either dopamine infusion (10–20 µg/kg/min), or norepinephrine infusion (0.2–0.4 µg/kg/min). The primary outcome of the study was to determine the proportion of preterm neonates achieving early (within 45 minutes of initiation) reversal of fluid refractory septic shock in both groups. The analysis was stratified into two gestational age strata i.e. (<32 weeks and ≥ 32 weeks).

We found that the proportion of preterm neonates achieving reversal of septic was 11/26 (42.3%) in the dopamine group vs 15/24 (62.5%) in the norepinephrine group, respectively (RR 0.677, 95% CI 0.392-1.168). Among secondary outcomes, the proportion of neonates requiring additional vasoactive drugs was significantly lesser in the norepinephrine group 8/24 (33.3%) vs dopamine group 16/26 (61.5%), respectively (RR 1.846, 95% CI 1.000-3.509, p 0.046). There was significant difference in other clinical outcomes. The stratified analysis demonstrated comparable results for both primary and secondary outcomes between norepinephrine and dopamine groups.

Conclusion: Among preterm neonates with fluid refractory septic shock, norepinephrine (0.2–0.4 µg/kg/min) and dopamine (10–20 µg/kg/min) had comparable efficacy and safety.

Key words: septic shock, norepinephrine, dopamine, preterm, neonatal intensive care unit

8. **COMPARISON OF BODY COMPOSITION OF PRETERM NEONATES ON A STANDARDIZED FEEDING REGIMEN AT TERM EQUIVALENT AGE WITH NEONATES BORN AT TERM**

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Introduction: Preterm infants grapple with growth obstacles, commonly extra uterine growth restriction (EUGR).. Striking the right balance for optimal growth remains challenging. Measures to mitigate EUGR comprehensively understand the long-term health implications of preterm birth on body composition and future metabolic health are imperative.

Aims and Objectives :

Primary outcome: To compare the body composition of preterm neonates <34 weeks fed on standardized feeding regimen at term equivalent age (TEA) with neonates born at term

Secondary outcome: To determine the growth (anthropometry) and body composition of preterm neonates at TEA in gestational subgroups of < 28 weeks, 28-<32 weeks and 32-< 34 weeks.

Material and Methods: This prospective cohort study was conducted in a tertiary care hospital, between November 2021 to November 2022. A total of 94 neonates were recruited to the study including 47 preterm infants (<34 weeks gestation) and 47 term controls (37-41 weeks). Air Displacement Plethysmography was used to evaluate body composition .

Results: At term equivalent age (TEA), preterm infants exhibited a significantly higher percentage of body fat (16.34%) compared to term infants (8.05%), suggesting a notable difference in adiposity (p = 0.034). Fat mass in preterm infants (0.42 kg) was significantly greater than in term infants (0.22 k g ; p = 0.002).There were no statistically significant differences in the other parameters of body composition

Conclusion: The study highlights that preterm neonates at term equivalent age group have higher fat mass as compared to neonate at term equivalent age groups . The standardized feeding regimen being used is not sufficient to mitigate the changes in the body composition.

9. **Polymerase chain reaction in neonatal meningitis –a prospective observational study**

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Introduction: Appropriate management of neonatal meningitis requires identification of the microbe. The low microbe detection rate on Cerebrospinal fluid (CSF) culture makes it less useful. Diagnostic utility of CSF cytology and biochemistry are inconclusive. Polymerase chain reaction (PCR) has advantages of higher detection rate and early turnaround time. There are limited prospective studies on use of PCR in neonatal meningitis.

Aims and Objectives: To describe the proportion of neonates with a negative CSF PCR among those with a negative CSF culture.

Also, to compare short term outcomes (survival, neurologic status by 4 months of age) between babies with negative CSF PCR and total cohort of culture negative CSF.

Materials and Methods: All babies who were CSF culture negative were eligible. CSF analysis results (cytology, biochemistry and PCR) and clinical outcomes (survival and Denver II development assessment at 4 months) were collected prospectively.

Results: Among 78 babies with CSF culture negative, 57 (73.1 %) had PCR also negative for bacteria.

No differences in survival rates (98. 2 vs 97.4 %), normal development at 4 months (64.7 vs 66.7 %) were noted between babies with PCR negative and total cohort of CSF culture negative. Abnormal CSF sugar values were more common in PCR positive babies (28.6 vs 11.1, p=0.07). Traumatic CSF was significantly associated with abnormal cytology.

Conclusion: A significant proportion of babies had CSF PCR negative when their culture was negative. PCR may be a valuable adjunct in excluding meningitis. The PCR may be of greater value in settings of traumatic CSF.

Keywords: Neonatal meningitis, CSF PCR

10. **Efficacy and Safety of Intranasal Application of Human Milk for Neuroprotection in Preterm Infants: A Randomized Controlled Trial**

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Introduction: Preterm infants are at high risk of neurodevelopmental impairments. No specific intervention is available which can mitigate brain injury in these infants. **Aims and Objectives:** To compare the efficacy and safety of intranasal application of human milk for neuroprotection in preterm infants. **Materials and Methods:** This open-labeled, randomized trial was conducted on 140 preterm infants below 34 weeks' gestation (70 infants in each group). In experimental group, 0.2 ml of human milk per nostril was instilled four times a day for 28 days or until discharge, whichever was earlier. The control group was given usual care. Primary outcome was white matter injury (WMI) global score, as assessed by brain MRI at term equivalent age (TEA). Secondary outcomes included neurodevelopmental assessment and brain MRI at 6 months' corrected age, intracranial hemorrhage, late onset sepsis, length of hospitalization, mortality, safety of intranasal human milk application and mother's perception of intervention. **Results:** Both groups were comparable for baseline maternal and neonatal characteristics. We found no difference in WMI global score at TEA between the two groups. Post-hoc analysis of data showed lower incidence of periventricular leukomalacia grade ≥2 in experimental group than in control group [5 (11.9%) vs 11 (26.1%); RR 0.35(95% CI 0.14-0.90); p = 0.029]. Other secondary outcomes were comparable. The intervention was well tolerated. **Conclusions:** The present study did not show any difference in WMI global score at TEA in preterm infants below 34 weeks' gestation.

Key words: Intranasal human milk, neuroprotection, prematurity

11. **Data must drive policy: Critical care resource utilisation and outcomes of neonates born at 22-28 weeks of gestation: A prospective observational study**

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Introduction: Information on outcomes of extreme preterm neonates, especially those born at thresholds of viability would aid parent counselling, drive policies and help plan resource-allocation. Conviction to institute best practices for fetal and neonatal well-being in these small gestations would affect outcomes. We recently adapted a joint, pro-active approach to management of 22-23 weeks' gestation deliveries with targeted protocols.

Aim & objectives: This study was planned to analyse survival of extreme preterm(22-28weeks)and their specific resource utilisation. Subgroup analysis for 22-25 weeks (periviable) was separately intended

Materials & Methods: Relevant clinical data were collected prospectively.

Results: Of 80 neonates born with this gestation 68 babies were analysed. Six families opted for comfort care at 23 weeks. Overall 72.1% of 22-28weeks were discharged home. Survival rates was 42.9% at 22-25weeks;and 92.5% at 26-28 weeks. From previous *nil survival at 23 weeks*, the revised policy led to *50% success rate.* Resource utilisation of 23 to 25weeks was high at median duration of respiratory support was 85(72,91) days.

Conclusion: Good survival outcomes in extreme preterm infants suggests that intensive care must be indeed offered to these neonates (>90% in 26 weeks and above). Uniform fervour and positive outlook is required to change attitude to care of periviable pregnancies. Our prospective study on outcomes for distinct small gestations could serve as guidance for clinicians' protocols, counselling of parents, improve preparedness, resource allocation and aid policy decisions.

12. **Antibiotic resistance by a Polymerase Chain Reaction panel in Neonatal Sepsis- A Prospective Observational Study**

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Introduction: Antimicrobial resistance(AMR) is reported typically based on minimum inhibitory concentrations. There is need for analysing underlying risk of resistance by genetic endowment. Testing for AMR genes has potential benefits (unaffected by previous therapy, rapid turn-around-time). We evaluated for the absence of *AMR genes* by PCR among sick neonates investigated for sepsis.

Aims and objectives: This prospective observational study was planned to measure proportion of samples having no antimicrobial-resistance gene(ESBL/Carbapenemase). Survival and short-term outcomes at discharge among neonates without resistance genes with the total babies investigated for infection was also compared.

Materials and Methods: The unit protocol includes testing for AMR by PCR when a neonate is initiated on a new antibiotic for suspect sepsis. Samples were analysed by PCR, along with culture samples. *Samples for genetic studies were analysed directly from blood / body fluids, not from cultures*. Data was collected prospectively and analysed for the outcomes.

Results: Among 78 sick babies investigated for sepsis *56 (71.8%) samples had no antimicrobial resistance gene*. OXA48 was the most reported 18(23 %) resistance gene. Survival (92.9% vs 93.6%) and normal outcomes at discharge (91.5 % vs 94.1%) were similar among babies with any AMR gene and those with no resistance. The proportion of resistance gene positive was similar in early onset and late onset sepsis. The presence of resistance genes was not associated with mother or baby receiving antibiotics prior to test.

Conclusion: We found a low occurrence of AMR genes in our cohort of suspected neonatal sepsis. Testing could minimise use of high end antibiotics.

13. **Clinical characteristics and outcomes of neonates admitted to the neonatal intensive care unit with culture negative sepsis- a case-control study.**

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Background:
Sepsis is the leading cause of morbidity and mortality among neonates While most studies focus on culture-positive sepsis, culture-negative sepsis is common but often treated without appropriate recognition.. The study aimed to compare the demographics, clinical characteristics, and outcomes, primarily the occurrence of target end-organ damage in neonates with culture negative vs culture positive sepsis

Methods:
A case-control study was conducted on neonates with CRP > 1 mg/dL who had received antibiotics for > 5 days but had no confirmed bacterial culture. Comparisons were made with neonates with culture-positive sepsis as controls. univariate and multivariate analysis including a receiver operating characteristic (ROC) analysis of CRP cut-offs, was used to assess the risk of shock and meningitis.. A post hoc Kaplan Meyer analysis was done to analyse shock progression

Results:
A total of 63 cases and controls were enrolled. The baseline characteristics were similar. The incidence of meningitis and mean CRP value was higher among the culture positive sepsis. The primary outcome of end organ damage was higher among culture positive sepsis, The incidence of shock (2.8 fold) and DIC (12 fold) was significantly higher (using logistic regression). On application of ROC curve, it was found that a CRP > 3 mg/dl could significantly predict end organ damage and a CRP > 4.13 mg/dl could significantly predict meningitis.

Conclusion
End-organ damage, including shock, DIC, thrombocytopenia, AKI, and seizures, was more frequent in culture-positive sepsis. CRP levels above 3 mg/dL are predictive of early organ damage, while CRP> 4.13 mg/dL is associated with meningitis.

14. **Comparison of in-hospital outcomes and neurodevelopment at 12 to 24 months in periviable infants treated at a tertiary care neonatal unit between two time periods: a retrospective analytical cohort study**

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INTRODUCTION: Periviable period refers to the earliest stage of fetal maturity when there is a reasonable chance, although not a high likelihood, of extrauterine survival. With no national consensus guidelines being available, the decision to offer aggressive neonatal care for these infants, is often driven by family preferences and expectations, expertise and resourcefulness of the neonatal team. We have attempted to understand this lacuna by addressing the outcomes in the periviable infants.

OBJECTIVES: To study the mortality, in-hospital morbidities and neurodevelopmental impairment in periviable infants treated in a tertiary care NICU and compare outcomes between 2epochs.

MATERIALS AND METHODS: It was a retrospective analytical cohort study done from July 2024 to September 2024 after obtaining ethical clearance. Case records of infants between 23+0 weeks to 26+0 weeks who were admitted to our NICU, given aggressive neonatal care and survived beyond 12hours of life, were extracted from medical records department from January 1st 2017 till December 31st 2023. We classified the neonates into epoch 1(2017-2020) vs epoch 2 (2021-2023) and outcomes were compared. The primary outcome studied was survival rate and secondary outcomes were in-hospital clinical morbidities. Neurodevelopmental assessment by DASII scale at 12-24months for surviving infants, available from high-risk infant follow up clinics was collected.

RESULTS: 140 infants were included in the final analysis–71 in epoch1 and 69 in epoch2.The Median(IQR) gestational age of infants in epoch1 was 25.28(24.85, 25.85)weeks vs. 25.14(24.78, 25.57)weeks in epoch2. The median(IQR) birth weight of infants in epoch1 was 703(618, 750)grams vs. 710(645, 760)grams in epoch2. Eight infants were referred to other hospitals and mortality outcome was not known. Mortality of the remaining infants in the study cohort was 30(42.3%)in epoch1 vs. 21(30.4%)in epoch2. BPD was present in 14(40%)in epoch1 vs. 18(45%)in epoch2, p-0.66 and the composite outcome of death or BPD was seen in 44(67.7%)in epoch1 vs 37(60.7%)in epoch2, p-0.41. On follow up of surviving infants, developmental delay was seen in 8(36%) in epoch1 vs. 12(42.9%) in epoch2,p-0.77.

CONCLUSION: Temporal trends with non-significant increase in survival of periviable infants and concomitant increase in BPD rates was observed when advanced neonatal care was provided. Composite outcome of death/BPD remained the same in both epochs. Neurodevelopmental impairment was found to be high in both the epochs. **Key words**: peri viable birth, in-hospital morbidities, neurodevelopmental impairment.

15. **INFANT DRIVEN VS PHYSICIAN DRIVEN PALADAI FEEDING IN PRETERM NEONATES BORN ≤ 32 WEEKS : A RANDOMISED CONTROLLED TRIAL.**

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Introduction:

The transition from gavage feeds to suck feeds by paladai cup is an important clinical decision but consensus on the timing and the decision-making tools is still elusive. Infant cue-based feeding practices are increasing being adopted by neonatal units globally, but evidence is limited comparing the same with the more traditional scheduled feeding method, which is more commonly used in LMICs like India. Hence, we conceived a clinical algorithm, which allowed the mother or bedside nurse to initiate and advance transition from gavage feeds to paladai cup feeds through achievement of specific milestones using infant behavioral feeding readiness signs and hunger cues rather than daily physician orders. We hypothesized that application of this feeding transition method to a representative preterm population would result in an earlier gestational age for achievement of full oral feeding, without compromising weight gain and other outcomes.

Methodology:

It is an open-labelled, randomized controlled parallel group done from June 2023 to June 2024. Infants born ≤ 32 weeks and hemodynamically stable and tolerating 75% of enteral feeds were approached and informed consent was taken. Once the infant reached full enteral feeds, they were randomized into two groups – Infant driven feeding [IDF] group and Physician driven feeding [PDF] group. In the IDF group, nurses initiated and advanced cup feeds in consultation with mothers, whereas in the PDF group, the decision to initiate and advance feeds was physician driven. The postmenstrual age at full gavage free paladai cup feeds was the primary outcome assessed.

Results:

63 infants were analyzed in each group after exclusions. The median gestational age was 28.5 weeks in IDF group vs 28.4 in PDF group p 0.52. The median postmenstrual age at which cup feeding was initiated was 31.0 wks in IDF group vs 32.2 wks in PDF group, p <0.001. The median duration of transition from tube to paladai feeds was higher in IDF group (8 days) compared to PDF group (6 days), p 0.019. However, the primary outcome of PMA at full paladai cup feeds was reduced by 1 week in the IDF group (32.2 wks), compared to the PDF group (33.3 wks) p < 0.001, which resulted in a significant decrease in duration of hospital stay (IDF 33 days vs. PDF 34 days, p 0.017). Although, the number of adverse events causing hemodynamic instability was higher in the IDF group, the rate of serious adverse events was similar as were other outcomes like anthropometric parameters, death, NEC and sepsis rates.

Conclusion:

Infant driven feeding initiation and transition to gavage free cup feeds resulted in lower gestational age at full cup feeds and reduced hospital stay.

16. **'H-ER-O-S' -A Quality improvement initiative to reduce VAP in NICU: a journey through unlearning, re-learning and bridging the gap.**

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Introduction: Ventilator-associated Pneumonia (VAP) is one of the most common hospital-acquired infections, leading to increased morbidity and mortality in neonates. This is especially true for preterm babies who need to stay in the hospital for an extended period of time.

Aim statement: We aim to improve the compliance of components of the VAP prevention bundle from current 20% to >80% to reduce VAP rate of 49.5 per 1000 ventilator days to less than 10.

Methodology: This quality improvement study was conducted in a tertiary care public hospital's neonatal intensive care unit(NICU) during May 2023 till July 2024. Baseline VAP rate was determined, team consisting of all the stakeholders was formed. The problem was analysed using various tools, and the main contributing factor determined was low compliance with VAP bundle care. Multiple Plan-Do-Study-Act (PDSA) cycles were done using POCQI methodology. The data was collected prospectively and analysed regularly with the team members, and actions were planned accordingly. Ethics committee approval was taken as this study involved diversion of institutional data.

Results: The VAP rate decreased from 49.5 per 1000 ventilator days(June 2023) to 8.1(February 2024). It sustained for over 6 months(Feb 2024 till July-2024) at 7.64±2.85. The baseline compliance for components of VAP care bundle increased from 20% to >80% and sustained for a period of 6 months at 92+6.9%

Conclusion: This study demonstrated that quality-improvement techniques help in reducing VAP. Compliance with targeted H-ER-O-S protocol helped as it was contextualised.

17. **Nasopharyngeal Prongs vs RAM Cannula for Delivering Non-invasive Positive Pressure Ventilation: An Open-label Randomized Controlled Trial**

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Introduction: While literature supports the use of RAM cannula and nasal mask to administer nasal CPAP, evidence lacks on the preferred interface for non-invasive positive pressure ventilation (NIPPV). We hypothesized that by delivering positive pressure breaths closer to the larynx and reducing leakage, nasopharyngeal (NP) prongs may be superior to RAM cannula in NIPPV.

Aims and objectives: To compare the efficacy of NP prongs and RAM cannula in reducing the need for invasive ventilation among preterm neonates receiving NIPPV.

Material and methods: In this open- labelled randomized controlled trial, neonates born at $28^{0/7}$ to $36^{6/7}$ weeks of gestation and receiving NIPPV were randomized to NP prongs (n=77) or RAM cannula (n=73) groups. The randomization was stratified for gestation at birth and timing of support (primary and post extubation). Primary outcome was the need for invasive ventilation within 72 hours of randomization.

Results: Birth weight, gestation, underlying respiratory morbidities, and other baseline characteristics were comparable in the two groups. The incidence of invasive ventilation within 72 hours of starting NIPPV was comparable in the two groups (33% vs. 28%, RR: 1.17, 95% CI: 0.72 to 1.89, P=0.44). No interaction was observed between primary outcome and stratification variables. The incidence and severity of nasal injury, duration of respiratory support and other secondary outcomes were also comparable in the two groups.

Conclusion: In comparison to RAM cannula, use of NP prongs did not reduce the need for invasive ventilation in preterm neonates receiving NIPPV.

Key words: neonate, non-invasive respiratory support, ventilation

18. **Effect of Kangaroo Mother Care (KMC) on Cerebral Blood Flow (CBF) in hemodynamically stable preterm infants and neurodevelopmental outcomes at one-year corrected age: A Prospective Cohort Study**

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Introduction: Kangaroo mother care (KMC) is widely used to improve the care of preterm and low birthweight infants. However, little is known about cerebral hemodynamics in preterm infants during KMC intervention and their neurodevelopmental outcome.

Aim & objective: To study the effect of KMC on CBF in hemodynamically stable preterm infants and neurodevelopmental outcome at 1 year corrected age.

Methods: This prospective cohort study included 52 hemodynamically stable preterm infants receiving KMC. Physiological parameters were measured at baseline, 90 and 120 minutes of KMC, and 60 minutes post-KMC. Middle cerebral artery (MCA) blood flow parameters were assessed at baseline, 120 minutes of KMC, and 60 minutes post-KMC using transcranial Doppler ultrasonography. Neurodevelopmental outcomes were evaluated for 40 infants at 1 year corrected age using the Bayley Scales of Infant Development-4 (BSID-4).

Results: MCA Doppler viz., PSV and MV improved significantly at 120 minutes of KMC compared to baseline values and the effect persisted at 60 minutes post KMC for PSV, EDV and MV. Physiological parameters viz. HR and SpO2 showed significant improvement at 90 and 120 minutes of KMC. Higher MCA end-diastolic velocity (EDV) indices one hour post-KMC correlated with better cognitive and motor scores on the BSID-4 at one year corrected age.

Conclusion: KMC improves cerebral hemodynamics in hemodynamically stable preterm infants, which may contribute to improved long-term neurodevelopmental outcomes, especially in motor and cognitive domains. These findings support the use of KMC as a beneficial intervention for preterm infant care and highlight its potential impact on brain development.

Keywords: Kangaroo Mother Care, Cerebral blood flow, Hemodynamically stable, Preterm Infants, Neurodevelopmental outcomes

19. **NEPTUNE trial: Neonatal Extubation failure Prevention Trial Using Nebulised Epinephrine.**

Scientific Title: "Post-extubation Epinephrine Nebulization for prevention of Extubation Failure in Neonates: a Randomized Controlled Trial"

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Background: The epinephrine nebulization for post-extubation care in neonates is a widely practised among different Neonatal Intensive Care Units (NICUs). Available evidence is insufficient regarding its role in decreasing extubation failure in neonates.

Aims and objective: To determine the role of epinephrine nebulization in addition to standard care in successfully preventing extubation failure in term and preterm neonates.

Materials and Methods: This was a randomised trial conducted in the NICU of a tertiary care hospital in North India. A total 158 term and preterm neonates ventilated for 48 hours to 2 weeks were included at the time of extubation. Neonates were randomized either to standard care group (SG) or epinephrine nebulization group (EG).

Results: Primary outcome: The need for reintubation within 48 hours was comparable in both the groups with 14.8% in EG and 24.7% in SG (P value-0.11, 0.53-1.04). Secondary Outcomes: The extubation failure beyond 48 hours, median time of reintubation in hours, respiratory distress score immediately post extubation and at 4 hours, 8 hours and 12 hours as measured by Silverman Anderson, were comparable in both the groups. However, at 24 hours there was a lesser distress in the EG compared to SG group (2.13±1.06vs 2.62±1.40, p=0.03, 0.54-0.93). Other secondary outcomes viz laryngeal edema, postextubation non-invasive respiratory support, duration of postextubation hospital stay, total hospital stay and death were similar in both the groups. The adverse effects of epinephrine like tachycardia, peripheral vasoconstriction, ventilator associated pneumonia (VAP), need for antibiotics, and hypertension were comparable in both the groups.

Conclusion: Epinephrine nebulization immediately after extubation in comparison to standard care did not reduce the incidence of extubation failure.

Keywords: Neonate, Extubation failure, Epinephrine nebulization

20. **Hematological and iron status in infants with Rh isoimmunization: a prospective cohort study**

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Introduction: Current infant iron supplementation guidelines are generic, with the supplementation being recommended at 6 months of age in term and earlier in preterm neonates. However, infants with Rh isoimmunization, a common condition in India, may have iron overload given the accelerated hemolysis. In these infants, iron supplementation may not be needed, or potentially even be harmful. However, there is paucity of literature to make evidence-based recommendations.

***Methods*:** All neonates with Rh isoimmunization, defined as (1) ICT titre ≥ 1:32 and evidence of fetal anemia, or (2) DCT positive and requiring exchange transfusion, were eligible for inclusion in this cohort study. The primary outcomes were serum ferritin and hemoglobin at birth, 3, 6, 9, and 12 months. Additional outcomes were the requirement of packed RBC transfusion and iron therapy during infancy. Iron supplementation was given only if serum ferritin was <30 mcg/L at any visit. Subgroup analysis was performed based on receipt of intrauterine transfusion (IUT).

***Results*:** Fifty-six infants were enrolled (gestation 35 weeks (IQR 34, 37) weeks, weight 2490 ± 480 g). Thirty-five neonates (62%) received IUT and 21 (38%) received exchange transfusion. Median [IQR] ferritin at birth, three months (n=46), six months (n=36), nine months (n=38), and 12 months (n=35) was 846 [626, 1433] mcg/L, 695 [263, 1041] mcg/L, 219 [105, 601] mcg/L, 122 [42, 242] mcg/L, and 77 [42, 168] mcg/L respectively. Concomitant hemoglobin was 14.3 g/dL, 9.4 g/dL, 10.9 g/dL, 10.9 g/dL, and 10.7 g/dL respectively. pRBC transfusion was required in 26/47 infants (55%). Iron supplementation was started in 14/46 infants (30%). Ferritin and top-up transfusion requirements were higher in infants treated with IUT.

Conclusions: Infants with Rh isoimmunization demonstrate hyperferritinemia at birth, which can persist up to 12 months, particularly in those treated with IUT. Routine iron supplementation should be deferred in IUT-treated infants until 12 months.

21. Standard Nasal-Tragus Length versus Alternate Insertional Length Formula for Optimal Placement of Endotracheal Tube in Neonates-A Randomized Controlled Trial (SNAIL Trial)

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Introduction Current guidelines recommend to use standard formula based on nasal tragus length i.e., NTL+1 cm to estimate insertional length (IL) during endotracheal intubation. However, recent studies from Asia indicate that this formula may lead to malposition of endotrachal tube. Based on our previous study, we derived an alternate nasal tragus formula for the calculation of IL. We compared alternate NTL formula with standard NTL formula for optimal placement of endotracheal tube.

Methods This randomized controlled trial was conducted in a level IIIB neonatal intensive care unit in India from June 2022 to December 2023. Neonates who required endotracheal intubation were randomized to either standard NTL group or alternate NTL group. In standard NTL group, the IL of ETT was calculated as NTL+ 1cm and in the alternate NTL group, IL was calculated as IL = NTL +0.5 cm for a measured NTL up to 5.5 cm and IL=NTL for a measured NTL more than 5.5 cm.

Results: A total of 158 neonates were randomized: 79 in alternate NTL group and 79 in standard NTL group. Baseline maternal and neonatal characteristics were similar. Optimal placement of endotracheal tube was more frequent in alternate NTL group than in the standard NTL group [48 (65%) and 30 (39%), respectively] ($p=0.002$). Low placement of endotracheal tube was more frequent in standard NTL group versus alternate NTL group [41 (54%) and 14 (19%), respectively] ($p<0.001$). There was no difference in other secondary outcomes such as rate of reintubation within 1 hour, need for mechanical ventilation for >72 hours, pneumothorax or other air-leak syndromes, lung atelectasis and mortality.

Conclusion Use of alternate nasal tragus length formula in neonates requiring endotracheal intubation leads to a higher rate of optimal placement of endotracheal tube compared to standard NTL formula. (CTRI/2022/09/045209). **Keywords**- Endotracheal tube placement, Intubation, Malposition

22. Gravity assisted versus syringe pump assisted slow intermittent gavage feeding in preterm newborns: A randomized controlled trial.

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Introduction: Feeding intolerance is commonly encountered in preterm neonates and often leads to a change in the feeding plan.

Aims and Objectives: To determine whether slow intermittent gavage feeding over 30 minutes using a syringe pump compared with gravity assisted gavage feeding reduces feeding intolerance and results in a rapid establishment of full enteral feeding.

Material & Methods: Preterm infants with a gestational age between 28 0/7 to 36 6/7 were included in the study. They were divided into two groups: in the control group, the preterm infants received gravity assisted gavage feeding through an orogastric tube which was completed within 5 to 10 minutes, and in the intervention group, the preterm infants received slow intermittent feeding over 30 minutes with a syringe pump through an orogastric tube.

Results: A total of 150 neonates were enrolled in the study and 4 neonates were excluded from the study. Feeding intolerance was significantly higher in the control group vs. the intervention group (14 (19.4%) vs. 3 (4.1%), p-value = 0.004). (RR 0.21, 95% CI 0.06 to 0.70, NNT = 6). The time to achieve full enteral feeding did not differ significantly between the two groups (7.61 ± 1.32 days vs. 7.57 ± 0.89 days, p-value = 0.82).

Conclusions: Slow intermittent feeding over 30 minutes with a syringe pump had a lower incidence of feeding intolerance compared to gravity-assisted gavage feeding in preterm newborns.

Keywords: feeding intolerance; gavage tube feeding; full enteral feeding; preterm neonates.

23. **Automated versus Manual control of Oxygen in mechanically ventilated preterm neonates: an open-label, randomized, cross-over trial.**

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Objectives: To compare automated control with manual control of oxygen (FiO2) to maintain saturation in a target range of 91-95% in mechanically ventilated preterm neonates.

Methods: Open labelled, randomized, crossover trial conducted in mechanically ventilated preterm neonates in a Level III Neonatal Intensive Care Unit of a low-middle income country. We compared automated and manual control of FiO2 over two consecutive 12-hour periods. Closed loop oxygen control algorithm (Avea™ ventilator (CliO2)) was used for automated control. The manual control algorithm was developed, standardized and implemented during the run-in period. The sequence of FiO2 control was randomized (Automated followed by manual - AB sequence and vice versa - BA sequence). Primary outcome: Proportion of time the SpO2 was within target range (WTR).

Results: Mean (SD) gestation and birth weight of study neonates (n=25) were 29.4 (3.4) weeks and 1182 (416) grams, respectively. The proportion of time SpO2 remained WTR of 91-95% was higher in automated control arm but not significant compared with manual control arm [median (IQR): 71.5 (67.5, 80.4) versus 67 (55, 81), p=0.26]. Similarly, proportion of time the saturation remained below target (<91%), above target (>95%) and below critical cut-off (<80%) were comparable between the two arms. No significant period effect and carry-over effect was observed. Contrary to the belief, weekends showed a much tighter control of oxygen than weekdays.

Conclusions: No significant difference was observed in proportion of time WTR between automated and manual control of FiO2. Robustness of other automated algorithms need to be explored.

Keywords: Preterm, Oxygen saturation, Automated, Closed-loop, Titration, Control

24. **Comparison of SIMPAP with Bubble CPAP for treatment of respiratory distress in the initial 6 hours- A randomized control trial**

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Introduction: Preterm neonates are often born with respiratory distress requiring continuous distending pressure respiratory support. Nasal continuous positive airway pressure (CPAP) devices favor a good outcome when initiated early. In our country, most preterm babies are born in healthcare setups that are not equipped to offer CPAP support at birth. The failure to initiate the appropriate treatment in the initial hours could have cascading effects on the outcome. A portable, low-flow driven, non-electrical device (SIMPAP) [Patent pending at Indian Patent Office. Application no 201841018247] was developed and tested in an earlier in-vitro study.

Aims and Objectives: The present study compared SIMPAP with bubble CPAP as a primary respiratory support.

Materials and Methods: This was a randomized controlled non-inferiority trial conducted among 60 neonates between 28 and 37 weeks of gestation admitted with respiratory distress. The intervention group was initiated on SIMPAP support and the control group on bubble CPAP. The outcome measured was the change in Saturation Oxygen Pressure Index (SOPI) over 6 hours.

Results: The SOPI in the CPAP group was 1.150 (1.070 to 1.408) and in the SIMPAP group was 1.080 (1.060 to 1.501). The difference between the SOPI measured at recruitment and 6 hours in the CPAP group was 0.020(-0.001 to 0.213) and in the SIMPAP group was 0.010(0.000 to 0.030) p = 0.847.

The complications between the two groups were not statistically significant.

Conclusion: SIMPAP is non-inferior to bubble CPAP in the first 6 hours and up to 72 hours for the treatment of respiratory distress in preterm neonates.

Keywords: CPAP, Neonates, Preterm, Respiratory Distress Syndrome, SIMPAP

25. **Comparing safety of two drug regimens for pupillary dilatation for retinopathy of prematurity screening in preterm neonates: a double- blinded randomized crossover trial**

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Background

The side effect profile of one dilatation regimen for retinopathy of prematurity screening over the other is not well studied.

Objectives

The primary objective was to compare the effect of two mydriatic regimens, namely, instillation of 0.5% tropicamide followed by 0.5% tropicamide followed by combination of 0.5% tropicamide and 2.5% phenylephrine [T regimen] with a combination of 0.5% tropicamide and 2.5% phenylephrine instilled thrice [Tp regimen], on the diastolic BP and HR, until 15±5 minutes after ROP screening.

Methods

CTRI registration number for this trial is CTRI/2022/01/039339. It was a double-blinded, randomized crossover trial conducted from April 2022 to July 2023. The infants needing ROP screening were randomly assigned to either of the two drug regimens at the enrollement (Period 1) and were administered the other regimen during crossover (Period 2) which would be during the next ROP screening. During each period, baseline BP and HR (1 hour±15 minutes prior to the start of instillation of mydriatic drops), BP and HR and after 15±5 minutes of ROP screening, were measured. Generalized estimating equations population-averaged model was used to compare the two regimens and the differences in BP and HR were represented as adjusted mean differences (adjusted for the baseline value, period and crossover effect) with 95% confidence interval.

Results

Adjusted mean difference (from the baseline, until 15±5minutes after ROP screening) in diastolic BP for T regimen, compared to Tp regimen, was -1.8 mm Hg (95% CI -4.1 to 0.6) [p=0.14] and that for systolic BP was -2.9 (95% CI -5.8 to 0.1) [p=0.06]. For HR, the adjusted mean difference for T regimen as compared to Tp regimen was +4.5 bpm (95% CI 0.4 to 8.7) [p=0.03].

Conclusion

Mydriatic regimens (T and Tp) are not very different in terms of cardiovascular safety.

26. **Comparison of gestation age based, weight based and nasal-tragus length method for estimation of optimal insertion depth of endotracheal tube: An open-label randomized controlled trial**

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Background: Optimal placement of the endotracheal tube (ET) tip is necessary for safe and effective ventilation of the lungs. However, there is no consensus on the most accurate method for calculating the depth of ET insertion

Aims and Objectives: To compare the accuracy of three different methods for calculating depth of ET insertion in neonates

Material & Methods: In this open-label randomized controlled trial, 165 neonates of gestation age $25^{0/7}$- 41^{+6} weeks needing intubation during first 28 days of life were randomized to one of the three study groups. The depth of ET insertion was decided by one of the three assigned methods - gestation age-based (Kempley), weight-based (Tochen), and nasal-tragus length-based. The position of the ET tip was assessed by a blinded radiologist on an anterio-posterior chest radiograph. The primary outcome was the proportion of ET tip at optimal position defined as between first and second thoracic vertebra (CTRI/2022/12/048221)

Results: Birth weight, gestation at birth, the proportion of small-for-gestation age neonates, and otherbaseline characteristics were similar among neonates randomized to the three study groups. The proportion of optimally placed ET tips was similar in the three study groups (25/55 (45.4%) vs. 26/55 (47.2%) vs. 24/55 (43.6%), P=0.911). With all three methods, the ET tip was most commonly positioned below the T2 vertebra (29 (52.7%) vs. 28 (50.9%) vs. 28(50.9%), P=0.98).

Conclusion: No significant difference was observed in the accuracy of the three studied methods. Better methods are needed to calculate the depth of ET insertion in neonates.

Keywords: Endotracheal tube, intubation, neonate

27. **Predictive Ability of Lung Ultrasound Score for Response to Surfactant Replacement Therapy in Preterm Neonates ≤ 34 weeks gestation with Respiratory Distress Syndrome: A Prospective Observational Study (PLUS-RDS study)**

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Objectives: To evaluate the predictive ability of lung ultrasound score (LUS) for response to surfactant replacement therapy (SRT) in preterm neonates ≤ 34 weeks with respiratory distress syndrome (RDS), requiring respiratory support within 6 hours of birth.

Methods: This prospective observational study was conducted at a level IIIB neonatal intensive care unit (NICU) in India from August 2023 to July 2024. Neonates ≤ 34 weeks gestational age with RDS, needing respiratory support within 6 hours of birth were enrolled. Lung USG was performed at admission, 6 hours after SRT, before extubating from mechanical ventilation and before retreatment with SRT. Primary outcome of the study was predictive ability of LUS for response to SRT. Secondary outcomes were predictive ability of LUS to identify neonates who would need FiO2 > 0.30 in first 6 hours of life, predictive ability of LUS for successful extubation in first 72 hrs of life, LUS pre-surfactant and 6 hours post surfactant therapy and correlation of LUS with oxygenation indices pre-surfactant and 6 hours post surfactant therapy.

Result: Of 126 neonates of gestation ≤ 34 weeks born during the study period, 73 neonates were enrolled. The mean (SD) gestational age and median (IQR) birth weight of the enrolled infants were 30.4 (2.6) weeks and 1400 (1100 - 1842) g respectively. Surfactant therapy was administered to 48 (65.8%) of the neonates and 12 (16.4%) of these required additional doses. Receiver operating characteristic (ROC) curve for LUS predicting response to SRT showed an area under curve (AUC) of 0.758 (95% CI: 0.59-0.91; p = 0.002) at a cutoff score of 11.5. LUS had an AUC of 0.764 (95% CI: 0.65-0.87; p < 0.001) at a cutoff of 8.5 for predicting neonates that would require FiO2 > 0.30 within first 6 hours. Successful extubation was predicted at a LUS cutoff of ≤ 4.5 with AUC 0.746 (95% CI: 0.53-0.95; p = 0.033). The median (IQR) LUS before surfactant therapy decreased significantly post surfactant therapy from 9 (IQR 6.2,11) to 5 (IQR 4,10); p < 0.001. There was significant correlation between LUS and oxygenation indices.

Conclusion: We conclude that lung ultrasound has a fair diagnostic accuracy to predict response to surfactant replacement therapy (SRT) in preterm neonates ≤ 34 weeks.

Keywords: Lung ultrasound score, Surfactant replacement therapy, Oxygenation indices.

28. Effect of sustained Multi-nutrient Milk Fortification beyond Hospital Discharge on the Growth of Very Preterm Infants - A Randomized Controlled Trial

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Introduction: While evidence supports the benefits of human milk (HM) fortification, such as improved growth and better nutritional status, the long-term advantages and optimal duration, particularly beyond hospital discharge, are not well established. This study examines the immediate and long-term growth outcomes of home-based HM fortification beyond hospital discharge in very preterm and VLBW infants, assessing the feasibility of this intervention and determining the optimal duration for continued fortification.

Methods: We conducted an open-label, parallel-group, randomized controlled trial in preterm neonates (26-32 weeks gestation and ≤1500 grams birth weight) on fortified breastmilk prior to discharge. Participants were randomized into two groups: group A received sustained home-based breastmilk fortification until 40 weeks PMA, while group B was discharged on unfortified breast milk. The primary outcome was the rate of weight gain at 40 weeks PMA. Secondary outcomes included the rise in head circumference, length gain, laboratory parameters, incidence of prematurity-related comorbidities and long-term developmental outcomes.

Results: The fortification group showed significantly higher weight gain (17.85 vs. 14.72 g/kg/day) and length gain (1.78 vs. 1.46 cm/week). The fortification group also experienced less decline in weight Z scores at 40 weeks PMA (-0.29 vs. -1.14) and higher exclusive breastfeeding rates at three and six months corrected age. On neurodevelopmental follow-up, no significant differences in the cognitive and language scores using the BSID IV scales were noted at 9-12 months corrected age.

Conclusion: Extended HM fortification beyond hospital discharge significantly improved weight and length gain, mitigated declines in weight Z scores, and enhanced breastfeeding rates, supporting the potential benefits of this intervention for neonatal growth and development.

29. **EVALUATION OF SUCCESS RATE OF ULTRASOUND-GUIDED UMBILICAL VENOUS CATHETER INSERTION BY ALIGNMENT OF THE UMBILICAL VEIN AND DUCTUS VENOSUS IN NEONATES: A PROSPECTIVE COHORT STUDY**

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Back ground:

The rate of inserting an umbilical venous catheter (UVC) into the portal circulation is 23-54% in previous studies. While ultrasound (US) guidance is imperative in verifying catheter tip placement, techniques to avoid misplacement through the US have yet to be developed.

Aims and Objectives:

This study aimed to assess the effectiveness of a novel ultrasound-guided technique that aligns the umbilical vein and ductus venosus in improving the success rate of UVC placement in neonates.

Methods:

A prospective cohort study was conducted in the Department of Neonatology, at a Tertiary Care Hospital, from January to August 2024 (8 months). In this study, 30 neonates received umbilical venous catheter (UVC) insertion with ultrasound guidance, while a retrospective control group of 30 underwent traditional UVC placement without ultrasound. The insertion technique, as described by Kishigami et al., involved compressing the liver near the portal sinus to align the umbilical vein with the ductus venosus. Gentle pressure was applied with the ultrasound probe in the epigastric region, allowing the catheter tip to be advanced toward the ductus venosus. The position of the catheter tip was then checked immediately using an anteroposterior (AP) X-ray, with an optimal tip position defined as being located between the T8 and T10 vertebrae.

Results :

During the study, UVCs were inserted in 60 neonates. The ultrasound (US) group had a significantly higher success rate for catheter tip positioning, with 26 of 30 (86.6%) successful placements compared to 17 of 30 (56.7%) in the standard (SD) group (RR = 1.52, 95% CI: 1.08 to 2.15, p = 0.0152). Procedure times were shorter in the US group (mean 26.1 minutes, SD 5.8) compared to the SD group (mean 34 minutes, SD 4.3), with a mean difference of 7.9 minutes (95% CI: 5.2 to 10.5, p = 0.0001). The US group also had significantly lower additional X-ray exposure (4 cases vs. 13, RR = 0.30, 95% CI: 0.11 to 0.83; p = 0.0209). Additionally, there was a strong correlation (r = 0.9) between the Shukla formula for umbilical insertion length and ultrasound measurements.

Conclusion:

Our study demonstrated that aligning the umbilical vein with the ductus venosus under ultrasound guidance facilitated successful UVC insertion in 86% of cases, with no complications reported. This technique may be a valuable approach for ensuring the correct placement of UVCs in neonates.

Key words: ultrasound guided, umbilical venous catheter, uvc insertion

30. **Early Total Enteral Feeding (ETEF) versus Conventional Enteral Feeding (CEF) in neonates with birth weight of 750-1250 grams: A Randomized Control Trial**

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Introduction

India accounts for the highest number of preterm births and nutrition is a critical component of their overall management. Uncertainty exists regarding their feeding policy especially on regards to early total enteral feeding (ETEF) use in neonates with birth weight of 750-1250 grams.

Objectives

To compare the time of attainment of full enteral feeds and other clinical outcomes in preterm neonates with birth weight of 750-1250 grams receiving ETEF versus conventional enteral feeding (CEF).

Methods

One hundred and twenty-eight preterm neonates with birth weight of 750-1250 grams were randomized to ETEF or CEF group at 2 hour of life. In ETEF group, feeding was initiated on day 1 with 80 ml/kg/day enteral feeds and was advanced by 20 ml/kg/day till full enteral feed of 150 ml/kg/day was reached and sustained for 24 hours. In CEF group, feeding was initiated with 20 ml/kg of enteral feeds on day one and advanced as per pre-defined protocol, till full enteral feed of 150mL/kg was reached and sustained for 24 hours.

Results

Mean birth weight (grams) and gestation (weeks) of the 128 enrolled neonates was 1028.8 ± 163 and 1029.0 ± 161, and 29.1 ± 2.2 & 28.6 ± 2.2 in ETEF and CEF groups respectively. Neonates in ETEF group reached full enteral feeds 3.2 days earlier (mean/SD) (7.1 ± 3.5 days), than in the CEF group (10.3 ± 4.7 days) which was statistically significant (95% CI - 4.71 to -1.73) ($p<0.001$).

Feed intolerance was higher in CEF group (62.5 % vs. 28.1% - p 0.005). NEC occurred only in the CEF group and late onset sepsis was higher in CEF group (32% vs.14.8%). Neonates in the ETEF group regained birth weight 3 days earlier and the mean duration of hospital stay (days) were 4 days shorter (42.9 ±17.4 vs. 46.9 ± 17.3). BPD,ROP and AOP were similar in both the groups.Incidence of PDA (21.9% vs 10.9 %) and mortality were higher in CEF arm (7.8% vs 4.7%;RR 0.60(0.15-2.40).

Conclusion

Early total enteral feeding in sick preterm neonates with birth weight of 750-1250 grams leads to early attainment of full feeds, earlier regaining of birth weight, shorter hospital stay and reduced incidence of PDA, without increase in incidence of NEC, feed intolerance, sepsis and mortality.

31. Safety and efficacy of double plastic wrap in reducing insensible water loss in preterm infants in first week of life a pilot randomized controlled trial from a low-to-middle-income country

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Background Preterm infants suffer from excessive insensible water loss in the postnatal period. Established practices like cling wrap might not be sufficient alone in reducing this loss. Although an incubator is a better option, it might not be affordable in developing countries. Hence, we tried to explore double plastic wrap (cling wrap attached to bassinet and occlusive wrap covering the baby) as low-cost solution of increased insensible water loss.

Methods In this pilot trial 63 inborn infants of less than 32 weeks of gestation and birth weight less than 1200 g were enrolled and randomized to either single (only cling wrap) or double wrap (cling with additional plastic covering) group after birth. This practice was allowed in addition to radiant warmer care and other routine thermoregulatory measures followed in the unit (controlled temperature and humidity of the room, heated humidified gas for respiration, oil application and cling wrap). Intervention was continued till the first 7 days of life unless they met any pre-specified withdrawal criteria. Primary outcome was difference in total insensible water loss in the first 7 days of life between 2 groups. Secondary outcomes were differences in cumulative insensible water loss in the first 72h, 4-7 days of life, average insensible water loss in the first week, neonatal morbidities, mortality and time to event analysis.

Results Of 63 infants randomized, 32 were allocated to single wrap and 31 to double wrap group. Total insensible water loss in first 72h and first week were significantly lower in the double wrap group (mean difference -15.34 g/m2/h; 95 % confidence interval -29.46 to -1.23 g/m2/h and mean difference -37.2 g/m2/h; 95 % confidence interval -62.9 to -11.5 g/m2/h for 0-3 day and 0-7 days of life respectively).Apart from increased incidence of patent ductus arteriosus in double wrap group (41.94% vs. 15.62%, p 0.027)no other clinically significant outcomes were different between 2 groups. Median time to weaning from respiratory support, regain birth weight and discharge from health facilities were also similar between 2 groups.

Conclusion Double plastic wrap has been found to be safe and effective in the setting of a low-to-middle income-country.

32. Comparison of Risk Factors plus Sepsis Screen-Based approach (RFSS: AIIMS protocol) and National Neonatology Forum – Clinical Practice Guidelines (NNF-CPG) recommendations for managing asymptomatic neonates with early-onset sepsis risk factors: An Ambispective cohort study

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Introduction The treatment of asymptomatic neonates with early onset sepsis (EOS) risk factors poses a significant challenge. In the absence of optimum diagnostic criteria, different authorities use low or high threshold of antibiotic initiation with consequent risk of antibiotic overuse or risk of missing a case of sepsis. The Clinical Practice Guidelines (CPG) of the Indian National Neonatology Forum (NNF) recommend a lower threshold for antibiotic therapy in preterm neonates with risk factors of early-onset sepsis (EOS)–the presence of one critical ('red flag') or two less critical ('yellow flag') factors. Conversely, the AIIMS Protocol advocates a higher threshold with empirical antibiotics in the presence of ≥2 risk factors and a positive sepsis screen.

Objective To compare the risk of inappropriate antibiotic initiation (defined as antibiotic stoppage after 3-5 days based clinical course and negative cultures) with AIIMS Protocol and NNF-CPG recommendations in asymptomatic preterm neonates (28-34 weeks) with EOS risk factors.

Methods In this ambispective study, we enrolled eligible neonates born between August 2021 and December 2022 (retrospective cohort) and from January to December 2023 (prospective cohort). All neonates were managed using AIIMS protocol, while NNF-CPG recommendations were applied hypothetically. Antibiotic usage and outcome data were collected from hospital records and by follow-up till discharge.

Results Of 236 neonates enrolled, 21 (8.9%) received antibiotics per AIIMS protocol compared to 124 (52.5%) who would have received with NNF-CPG (risk difference [RD]: -43.6%; 95% CI -50.9, -36.3). Inappropriate antibiotic initiation was lower with AIIMS protocol (13 [5.5%] vs. 108 [45.8%]; -40.3%; -47.2, -33.2). Among 215 neonates not initiated on antibiotics based on AIIMS protocol, 20 (9.3%) became symptomatic and received antibiotics later; the corresponding proportion would have been 10.7% (12/112) with the NNF-CPG (RD: -1.4%; -8.3, 5.5; p=0.69).

Conclusions In asymptomatic neonates (28-34 weeks) with EOS risk factors, the AIIMS Protocol could significantly reduce inappropriate antibiotic initiation compared to NNF-CPG, but at the cost of underdiagnosis in a minority. The optimal approach that accurately recognizes neonates with EOS while minimizing antibiotic overuse must be identified.

33. Whole genome sequence analysis of potential probiotic organisms isolated from breastmilk of Indian mothers

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Introduction: Breastmilk is vital in forming the newborn microbiome and affects various health outcomes. With more studies coming up on the benefits of probiotics in newborn, simultaneously there are growing concerns about their safety. Though the human milk microbiome is known to harbor beneficial bacterias and can become a safer alternative, their genomic data are scarce.

Aim: To isolate the breastmilk microbiome and study it's functioning and safety profile at the genetic level using whole genome sequencing [WGS].

Methods: The study included 30 mothers, whose milk samples were analyzed at three time points. DNA extraction was done after the isolation and identification of organisms by culture-based method. The isolates' clean reads obtained by the above methods were submitted to PATRIC's comprehensive genome analysis service (the all-bacterial Bioinformatics Database and Analysis Resource Center).

Results: 38 different bacterial species were identified by MALDI-TOF MS. Of which 6 were selected for WGS. On analysis, 2 isolates thought to be Staphylococcus hominis and Weissella cibaria, turned out as Staphylococcus hemolyticus and Bacillus altitudinis. No antimicrobial resistance [AMR] genes were found in Micrococcus luteus, Micrococcus lylae, and Lactobacillus gasseri, but Bacillus altitudinis, Staphylococcus hemolyticus and Staphylococcus warneri had resistance genes. All the tested isolates had various virulence factors [VFs]. But none of the AMR and VFs genes were present on IS elements and none of the isolates were plasmid-encoded rendering these genetic materials non-transferable.

Conclusion: This study gives an insight into strain identification, functional pathways, antimicrobial resistance genes, and virulence factors associated with human milk microbiome.

34. Impact Of Family Centred Care On Stress Levels Among Preterm Neonates Admitted to a Neonatal Intensive Care Unit In A Tertiary Hospital.

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BACKGROUND: Globally, one in ten infants are born prematurely, exposing them to significant neonatal stress from parental separation, invasive procedures, and adverse NICU environments. These stressors predispose these neonates to adverse neurological outcomes, including language, cognitive, sensory, and motor deficits, anxiety, depression, autism spectrum disorders, and behavioural issues. Despite WHO recommendations advocating for family involvement in neonatal care, Family-Centred Care (FCC) remains inadequately implemented, particularly in low- and middle-income countries (LMICs). This study examines the impact of FCC on neonatal stress, as indicated by salivary cortisol levels.

OBJECTIVE: To assess changes in stress levels among NICU-admitted preterm neonates before and after receiving FCC, as estimated by salivary cortisol levels.

METHODS: This before and after study was conducted among preterm neonates <32 weeks of gestational age, in a tertiary level NICU. Primary care giver/parents were trained to impart FCC skills from day 1 to day 3 of admission with the help of audio-visual modules & trained medical team as it being standard of care in our hospital. Stress levels were measured using salivary cortisol levels at admission (Day 1), and on Days 4, 7, and before discharge along with concurrent assessment of Pain using the Comfort Neo scale, and sickness severity via SNAPPE-II scores. Trends in salivary cortisol were analysed. The stress levels of primary care giver was also assessed quantitatively by salivary cortisol and qualitatively by PSS:NICU scoring . Statistical analysis utilized Friedman tests due to non-normal data distribution.

RESULTS: The mean salivary cortisol levels of neonates increased from 16.08 (+- 27.14) ng/ml on Day 1 to a peak of 18.11(27.43) ng/ml on Day 7, then decreased significantly to 8.66 (20.64) ng/ml [BR1] at discharge (Friedman Test: $\chi 2 = 19.7$, $p < 0.001$). Significant reductions in pain and sickness severity were also observed, highlighting the positive impact of FCC. There was also statistically significant reduction in stress of primary care givers at discharge (p value -0.002)

CONCLUSIONS:

There is a statistically significant decrease in stress levels, as indicated by the lower salivary cortisol levels, in preterm neonates who received FCC from admission to discharge. The findings support practicing FCC, especially in LMICs, to improve global neonatal health standards and outcomes.

Keywords: Family centred care, neonatal stress, salivary cortisol

35. **Evaluation of an innovative blended mode educational curriculum for care of small and sick neonates in India and SEARO countries**

Era Dayal, Praveen Kumar, Ashok Deorari, Pratima Anand, Srinivas Murki, Surender Singh Bisht

Introduction Neonatal health care in India is geospatially and culturally diverse, which is often a challenge for achieving uniform results across the country, with the same interventions. The context specific need is the curriculum should be easily disseminated across wider areas, mitigate the cost of training and education, must be evidence based, train the large number of personnel needed for providing quality neonatal care and uses technology driven methods for dissemination, monitoring and evaluation.

Objectives The goal and objective for designing current curriculum for healthcare providers was disseminating evidence-based practices to the personnel working in diverse neonatal care units across India. This nationwide effort for care of Small and Sick **Ne**wborn care and **Q**uality **I**mprovement **i**n **P**ractice (NEOQUIP) represents a cohesive attempt to implement evidence-based practices in a blended teaching learning mode. Another goal was to ensure that the respective teams can translate the knowledge to practice. We also aimed to identify champions and leaders across different units, who would then be able to drive this curriculum and sustain it over a period in their respective regions

Methods The curriculum of the NEOQUIP educational module was developed using the following steps (i) Need assessment (ii) Identification of the target audience: learners and the learning environments (iii) Measurable objectives (iv) Contents and Strategy of the module (v) Implementation through the organisational support (National Neonatology Forum) and (vi) Evaluation and feedback of the learners and the program curriculum

Results The NEOQUIP course was conducted in two phases. Overall, 1073 neonatal health care professionals (55% doctors and 45% nurses) (from public and private health care sectors) participated in this course. They were mentored by 132 facilitators (both nurses and doctors). First phase was conducted in 5 Indian states with 50 participants from each state (total 250 participants in Phase 1). The second phase was conducted in all the states across India and 4 SEARO countries. Total 823 participants (Figure 2) were enrolled in Phase 2 (625 from India, 64 from Maldives, 48 Bangladesh, 44 from Bhutan and 42 from Nepal). The enrolled participants were heterogenous in their composition with varied neonatal experience between 2 to 10 years. The course could retain the attention and interest of the participants till the end of 6 weeks, At the end of 6 weeks, 57.1% was the retention of delegates in online component. The assessment quizzes were completed by 57.1% by the end of week 6. The average attendance in the weekly live webinars was 50.1%. A total of 43 skill-based workshops were conducted as part of this

course, across the country and in the SEARO countries (Nepal, Bhutan, Bangladesh and Maldives) and 685 participants were trained.

Conclusion The blended learning curriculum promotes the exploratory and self-based learning with flipped class-based approach. The adaptable methodologically strong curriculum will help identify the generalisable solutions and incorporate them in future training programs. Focus on faculty development and recognition of local champions are crucial components for sustaining the gains from this educational module. Evolving, innovating and adapting as per the context specific problems, is the key to successful organisation of future similar educational modules.

36. **Effect of early intervention package on short term neurological outcome among < 34week neonates admitted in neonatal intensive care unit: A quasi-experimental study**

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Introduction - Ensuring quality care to babies born preterm is to ensure adequate sensory stimulation and a conducive environment for development during the "critical period" of brain development. Using the power of experience-driven neuroplasticity, "early intervention" (EI) is one of the best methods to neurodevelopmental outcome. Delivery of these interventions are best planned through the parents in concordance with the concept of responsive care as a part of nurturing care network for early childhood development.

Aims and Objective- To study the impact of an early intervention package compared to conventional care on the short-term neurological outcome at 3 months corrected age among preterm < 34-weeks admitted to a referral neonatal unit.

Materials and Methods- We conducted a quasi-experimental study in our tertiary care hospital which enrolled < 34-week preterm neonates (45 in each group) admitted in the NICU with the availability of a primary care giver from July 2021 to September 2022. Control group received family-centered care (standard of care) and the intervention group received an indigenously developed early intervention package as a part of the study which consisted of 6 modules - understanding the stress and regulatory behaviours of the neonate and their cues, supportive positioning and handling, sensory interaction via – auditory, tactile, kinaesthetic, vestibular and visual interventions, stimulation of the oral motor apparatus and non-nutritive sucking (OMS), promoting and protecting sleep, pain prevention with clustering of care and continued care after discharge till 3 months of age. The primary outcome was to develop this early intervention package and its neurological outcomes at 3 months corrected age assessed by HINE.

Results- We indigenously developed a parent centric, culturally sensitive, easy-to-understand and audio-video module in which we have tried to incorporate as many components of early intervention as possible which showed high acceptability among the primary care givers. There was a non-statistical difference in the mean Global HINE score at 3 months corrected age between the two groups - 66.69 (± 7.8) vs 67.69 (± 5.34) ((p= 0.541) with a statistical difference in the duration of hospital stay (26 vs 22 days {p = 0.008}) and exclusive breastfeeding rates at 3 months (89.1% vs 64 % { p=0.011}). There was no statistical difference in the other secondary outcomes.

Conclusions- This is a pilot study which demonstrated the feasibility of parent-delivered early interventions which can have long-term neurodevelopmental outcomes in preterm neonates.

37. The transport profile and outcomes of sick outborn neonates admitted to a tertiary care hospital in Uttar Pradesh: A cross-sectional study

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Introduction: The neonatal mortality rate (NMR) in Uttar Pradesh stands at 35.7 per 1000 live births, surpassing the country's average. The NMR in Uttar Pradesh remains above the INAP target, prompting the need for improved transportation of sick neonates to tertiary care facilities.

Objective: The primary objective was to investigate the transport profile and prevalence of mortality among outborn neonates. The secondary objective was to compare the morbidity characteristics at admission with mortality rates.

Methods: All outborn neonates consecutively admitted during the study period were included. The study detailed the neonatal transport services level, clinical features at admission, and the calculation of the SNAPPEII score, a widely used tool to predict neonatal mortality based on various clinical and physiological parameters. Mortality rates were then compared with the morbidity characteristics at admission.

Results: 59 neonates were enrolled, the primary reason for referral being sepsis (25, 42%). Most neonates (40, 68%) were transported in private ambulances. A mortality rate of 6 (10%) was observed, attributed to complications of sepsis. Notably, two neonates expired within 12 hours of admission, and five had a SNAPPEII score exceeding 40. Furthermore, shock due to multiple reasons (24, 41%) and disseminated intravascular coagulation (DIC) (10, 17%) were associated ($p<0.05$) with neonatal mortality.

Conclusion: The prevalence of mortality among outborn neonates is 10%. The association of shock (due to hypothermia, sepsis, hypoglycemia, prematurity, etc), DIC, and a SNAPPEII score exceeding forty at admission with mortality highlight the need for further research and the development of targeted interventions.

Keywords: neonatal transport, SNAPPEII score, neonatal mortality

38. **Assessment of innate immune-modulation induced by BCG vaccination given at birth in preterm neonates: An exploratory randomized trial**

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Introduction: Innate immune response in neonates is predominantly anti-inflammatory (TH2)-phenotype, rendering them susceptible to infections. Vaccination with BCG has been shown to promote pro-inflammatory TH1 response, inducing trained immunity. This immunogenicity of BCG may be strain-dependent.

Aims and objectives: To explore and compare the immunological effect of early BCG vaccination (within 24 hours of birth) in preterm neonates born at $30^{0/7}$ – $34^{6/7}$ weeks' gestation during the first week of life with two strains: BCG-Denmark and BCG-Russia.

Methods : Neonates were randomized to receive either BCG-Denmark, BCG-Russia or no vaccine. Blood samples were drawn on days 0, 3 and 7 and peripheral blood mononuclear cells (PBMCs) were extracted and cultured with lipopolysaccharide (LPS), a toll-like receptor 4 agonist for 24 hours. Supernatant was analysed for levels of IL1-beta, IL-2, IFN-gamma, TNF-alpha, IL-6, IL-8, IL-4, IL-5 and IL-10 via multiplex ELISA. Differences in cytokine levels were compared. Presence of BCG scar was assessed at 12 weeks of life.

Results: Seventy-five neonates were enrolled**.** Comparison of fold increase in cytokine levels with controls revealed increased IL-1β and IL-10 on day 7 with BCG-Denmark, and decreased levels of IFN-γ on day 3, and increased levels of IL-2 and IL-4 on day 7 with BCG-Russia. This indicated a shift towards a pro-inflammatory T_H1 – like response with BCG-Denmark, and persistence of dominant T_H2 – like response with BCG-Russia. Scar rates with BCG-Denmark and BCG-Russia were similar. No adverse effects were noted.

Conclusions: Early BCG in preterms led to a strain-specific immunomodulation within the first week of life. Larger studies assessing its clinical efficacy in sepsis prevention are warranted.

39. **Can Lung Ultrasound Predict the Need for Surfactant Retreatment in Preterm Neonates ≤ 34 weeks gestation with Respiratory Distress Syndrome? A Prospective Observational Study**

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Introduction: Lung ultrasound (USG) is a bedside tool which can be used to predict the need for surfactant retreatment. However, there are limited studies that have evaluated the predictive value of lung USG score (LUS) for need of surfactant retreatment.

Objective: To evaluate the predictive ability of LUS for need of surfactant retreatment in preterm neonates ≤ 34 weeks with respiratory distress syndrome (RDS), requiring respiratory support within 6 hours of birth.

Material and Methods: This prospective observational study was conducted at a level IIIB neonatal intensive care unit (NICU) in India from August 2023 to July 2024. Neonates ≤ 34 weeks gestational age with RDS, needing respiratory support within 6 hours of birth were enrolled. Lung USG was performed at admission, 6 hours after surfactant replacement therapy and before retreatment with surfactant. Primary outcome of the study was to evaluate the predictive ability of LUS for need of surfactant retreatment.

Results: Of 126 neonates of gestation ≤ 34 weeks born during the study period, 73 neonates were enrolled. The mean (SD) gestational age and median (IQR) birth weight of the enrolled neonates were 30.4 (2.6) weeks and 1400 (1100 - 1842) g respectively. Surfactant therapy was administered to 48 (65.8%) of the neonates and 12 (16.4%) of these required surfactant retreatment. The median (IQR) age of neonates at first dose of surfactant administration was 1 hour (1, 2). The median (IQR) LUS before surfactant therapy decreased significantly post surfactant therapy from 9 (IQR 6.2,11) to 5 (IQR 4,10); $p < 0.001$. Receiver operating characteristic curve of LUS to predict need for surfactant retreatment showed an area under curve of 0.88 (95% CI: 0.77-0.99; $p = 0.001$) at a cutoff score of 10.5.

Conclusion: We conclude that lung ultrasound has a fair diagnostic accuracy to predict the need for surfactant retreatment in preterm neonates ≤ 34 weeks.

Keywords: Lung ultrasound score, Surfactant replacement therapy, Surfactant retreatment

40. Comparison of Patterns and Trajectories of General Movements Between Late Preterm And Term Babies With And Without Fetal Growth Restriction

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INTRODUCTION

Fetal growth retardation (FGR) is a pathological condition ,characterized by impairment of fetal growth and development in utero.IUGR plays an important role in the neurodevelopmental outcome. The qualitative assessment of the general movements provides an insight into the maturation of the CNS and is thus is predictive of neurodevelopmental outcomes in both preterm and term neonates

AIMS AND OBJECTIVE

To compare the pattern and trajectory of general movements among late preterm and term babies with and without FGR at 40-44 weeks PMA and 3-5 months corrected age.

MATERIAL AND METHODS

In this study, General movements assessed in a total of 50 infants with asymmetric IUGR and their appropriate age-matched controls were examined. A score of abnormal vs normal was given by sequential videotape in the writhing and fidgety period. Scores were than compared between the groups.

RESULTS

It was found that the incidence of abnormal general movements was more in the growth retarded infants than in their age matched controls ($P < .001$).

We also demonstrated that infants with abnormal antenatal doppler were observed more often to have GMs of abnormal quality at 40-44 week of PMA. ($P < .001$).FGR infants also have lower scores of HNNE and HINE examination at the term equivalent age and at 3-5 months CGA.

CONCLUSION

This study highlights the higher incidence of abnormal general movement at term equivalent age in IUGR neonates, In order to initiate early intervention, it is essential to recognize abnormal neurologic signs as early predictors of neurodevelopmental delay.

41. EFFICACY AND SAFETY OF EARLY FORTIFICATION OF HUMAN MILK AS COMPARED TO STANDARD FORTIFICATION IN VERY LOW BIRTH WEIGHT BABIES – AN OPEN LABELLED PARALLEL ARM RANDOMIZED CONTROLLED TRIAL

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Introduction:

Nutritional management in VLBW babies has great influence on immediate survival as well as subsequent growth and development. It is a standard practice to add multicomponent HMF to human milk fed to VLBW infants to provide adequate nutrients to support growth. This randomised controlled trial was intended to study whether early fortification is effective in improving growth of VLBW babies, without increasing the incidence of adverse effects.

Objective: To compare the rate of weight gain (g/kg/day), time to regain birth weight (days), linear growth (cm/week) and increase in head circumference (cm/week) till discharge between early and standard fortification of human milk in VLBW babies.

Design: Randomized open-labelled controlled clinical trial - 2 arms

Setting: Neonatal Intensive Care Unit **(**NICU), AIIMS, Raipur

Subjects: Infants with birth weight (BW) <1500g with gestational age <34weeks, who are on breast-milk.

Methods: Infants were randomised to either EF group (fortification at 60mL/kg/day of enteral feed) and SF group (fortification at 100mL/kg/day of enteral feed). Fortification was done with Lactodex HMF in mother's expressed breast milk and continued till the infants reaches 2000g or till discharge, whichever is earlier. Primary outcome measures were daily weight gain, weekly linear growth and increase in head circumference (HC) till discharge.

Results: Weight gain, linear growth and increase in head circumference were comparable in both EF group (n = 60) and SF group (n=60). Weight gain (20.22g/kg/day and 20.17g/kg/d, P =0.957), linear growth (0.48cm/week and 0.47cm/week, P = 0.345) and increase in HC (0.60cm/week and 0.59cm/week, P =0.578). Incidence of feed intolerance was similar in both the groups (19 (31.7%) and 18 (30%)). 2 infants from SF group developed necrotizing enterocolitis and both were SGA infants.

Conclusion: Early fortification is as efficacious and safer as standard fortification. Also, we recommend studies with larger sample size for stronger evidences.

42. Adverse events of therapeutic hypothermia in neonates with moderate-to-severe hypoxic ischaemic encephalopathy: a single-centre retrospective observational study in a hospital in Bangalore, India

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Introduction: Therapeutic hypothermia is although found beneficial in moderate to severe encephalopathy in a Indian subcontinent setting, certain adverse effects are also observed in the same setting.

Aims and objectives: To determine the clinical features, complications in neonates receiving TH in Motherhood hospital, Indiranagar, Bangalore, India.

Material and Methods: A retrospective single-centre study of neonates with moderate-to-severe HIE who received TH from 1 June 2023 to 31 June 2024 was undertaken. Neonates were selected for TH as per the unit's protocol using either a servo-controlled device or a phase-changing material (PCM).

Results: 36 neonates were included with 25% intramural births. Mean gestation and birthweight were 37.2 (1.5) weeks and 2.630 (350) g, respectively. HIE staging was moderate in 78.2% and severe in 21.8%, with a mean cord pH of 6.98 (0.14) and seizures in 34.2%. Adverse events included shock (42.4%), clinically significant bleeding (8%), acute kidney injury (4.2%), culture-positive sepsis (9.4%), persistent pulmonary hypertension (5.7%), bradycardia (16.2%), and premature termination (2.1%). A servo-controlled device (84.2%) or PCM (15.8%) was used, with comparable adverse events. 92.4% of the neonates were discharged, 4.8% discharged against medical advice and 2.8% died.

Conclusion: Adverse events during TH range from asymptomatic laboratory abnormalities to life-threatening complications, which are manageable in well equipped units. Neurological impairment at discharge in neonates who received cooling mandates strict neurological follow-up.

Abbreviations: aEEG: amplitude-integrated EEG; AKI: acute kidney injury; BW: birthweight; EEG: electro-encephalogram; GA: gestational age; HELIX: hypothermia for encephalopathy in low- and middle-income countries; HIE: hypoxic ischaemic encephalopathy; IVH: intraventricular haemorrhage; LMIC: low- and middle-income countries; NICU: neonatal intensive care unit; PPHN: persistent pulmonary hypertension of newborn; PCM: phase-changing material; SGA: small-for-gestational age; TH: therapeutic hypothermia.

Keywords: Perinatal asphyxia; complications; low- to middle-income countries; outcome; total body cooling.

43. **EFFICACY OF FLUID RESTRICTION IN THE MANAGEMENT OF TRANSIENT TACHYPNEA OF NEWBORN – A RANDOMIZED CONTROLLED TRIAL**

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INTRODUCTION

Restriction of fluid in transient tachypnea of newborn (TTN) causes alveolar fluid absorption into lymphatic system. Limiting fluid intake in newborns with TTN in the first days of life can aid in clearing excess lung fluid, alleviating respiratory distress, and possibly shortening duration of oxygen administration.

AIM

This study aimed to evaluate the efficacy of restricted fluid therapy in the management of TTN.

MATERIALS & METHODS

This randomized control trial included late preterm and term neonates after excluding all the differential diagnosis for respiratory distress in newborns. Block randomization was used to assign the participants to receive restricted or age-appropriate fluids. The outcome measures assessed were the duration of oxygen administration need for noninvasive / invasive ventilation, duration of hospital stay.

RESULTS

During the study period, 50 eligible-neonates were enrolled with 25 in each arm. Gender, mode of delivery, GDM incidence, and non-invasive ventilation were similar between groups. At enrollment, infants received oxygen or CPAP. The fluid-restricted group received 15-20 mL/kg/day less fluid until recovery. The intervention group had slightly higher mean birth weight and gestational age. The intervention group had a shorter oxygen requirement (16% vs. 40%) and a shorter hospital stay(20% had a 4-day stay vs36% in control). CPAP duration was significantly less in the restricted arm(48 [42, 54]hrs vs 54[48,72]hrs, $p = 0.002$). However, no difference was observed in the incidence of CPAP failure between the two arms.

CONCLUSION

Fluid restriction demonstrated favourable outcomes in decreasing duration of oxygen requirement and need for non-invasive/invasive ventilation.

44. **Effect of on table breastfeeding in enhancing exclusive breast feeding among postnatal mothers who underwent lower segment cesarean section -A Prospective Cohort Study**

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Introduction: In our hospital, a QI initiative called Enhanced Recovery After Surgery(ERAS) project has been initiated from October,2022. As a part of this project,on table breastfeeding (OTB) has been initiated for post LSCS mothers.

Objectives: To assess whether on table breastfeeding initiation (OTB) in post LSCS mothers increases the exclusively breastfeeding rates at 6 months compared to routine initiation of breastfeeding .

Material and methods: Mother-baby dyads were divided into 2 groups of 132 each. Group A included mother-baby dyads enrolled in ERAS project where on table breastfeeding was done. Group B included those who received routine initiation of breastfeeding. Time of initiation of breastfeeding was noted. The primary outcome was exclusive breastfeeding at 6 months and secondary outcome included weight gain at discharge,6,10,14 weeks and 6 months. Information was collected during immunization visits/telephone.

Results: A total of 230 number of mother-baby dyads were followed till 6 months. In both groups, exclusive breastfeeding rates were high at discharge (95.58% in group A, 92.31% in group B) and 6 weeks(84.96% in group A,82.91% in group B), however declined at 6 months(50.4% in group A, 61.6% in group B). Mean time of initiation of first feed in group A was 16.7 minutes and 24 minutes in group B. There was no statistically significant difference in weight gain between both groups.

Conclusion: OTB as a part of ERAS initiative did not improve exclusive breastfeeding rates at 6 months. However, exclusive breastfeeding rates was significantly better in both groups at discharge and 6 weeks.

45. Antibiotic resistance by a Polymerase Chain Reaction panel in Neonatal Sepsis- a Prospective Observational Study

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Introduction: Antimicrobial resistance(AMR) is reported typically based on minimum inhibitory concentrations. There is need for analysing underlying risk of resistance by genetic endowment. Testing for AMR genes has potential benefits (unaffected by previous therapy, rapid turn-around-time). We evaluated for the absence of *AMR genes* by PCR among sick neonates investigated for sepsis.

Aims and objectives: This prospective observational study was planned to measure proportion of samples having no antimicrobial-resistance gene(ESBL/Carbapenemase). Survival and short-term outcomes at discharge among neonates without resistance genes with the total babies investigated for infection was also compared.

Materials and Methods: The unit protocol includes testing for AMR by PCR when a neonate is initiated on a new antibiotic for suspect sepsis. Samples were analysed by PCR, along with culture samples. *Samples for genetic studies were analysed directly from blood / body fluids, not from cultures*. Data was collected prospectively and analysed for the outcomes.

Results: Among 78 sick babies investigated for sepsis *56 (71.8%) samples had no antimicrobial resistance gene*. OXA48 was the most reported 18(23 %) resistance gene. Survival (92.9% vs 93.6%) and normal outcomes at discharge (91.5 % vs 94.1%) were similar among babies with any AMR gene and those with no resistance. The proportion of resistance gene positive was similar in early onset and late onset sepsis. The presence of resistance genes was not associated with mother or baby receiving antibiotics prior to test.

Conclusion: We found a low occurrence of AMR genes in our cohort of suspected neonatal sepsis.

46. **Predictors of in hospital mortality and time to death among asphyxiated neonates in a tertiary care hospital: a tale from an LMIC point of view.**

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Introduction: Prenatal asphyxia is defined by the WHO as the inability to start and maintain breathing at birth and insufficient oxygen delivery to critical organs. Birth asphyxia is the second most common cause of mortality in India. Inspite of advances in neonatal care, the incidence of mortality is high in asphyxiated neonates.

Aims and objectives: This study aims to determine the time to death and predictors of mortality among asphyxiated neonates admitted to public hospitals in central Maharashtra

Materials and methods: It was a retrospective cohort study. A total of 517 asphyxiated neonates, who were admitted to the NICU during January 2023 to December 2023 were included. The Cox proportional hazards model using bivariate($p<0.25$) and multivariate ($p<0.05$) analyses was used to identify the predictors of mortality. The median survival time was estimated using Kaplan-Meier survival estimates.

Results: The median survival time was 3 days and 16.1% of asphyxiated neonates died. Being low birth weight (adjusted hazard ratio (AHR) 1.89 (95% CI:1.21-2.95)) , being born late preterm (AHR 3.92 (95% CI:1.93-7.97)) and APGAR <7 at 5 min (AHR 2.41 (95% CI:1.48-3.93) were independent predictors of mortality.

Conclusion: In order to lower neonatal mortality in the high risk group, healthcare professionals and other stakeholders should promptly begin advanced diagnostics and suitable treatment interventions for newborns suffering from asphyxia.

47. **Clinical profile and outcomes of neonates who underwent tracheostomy at a tertiary care centre: A retrospective study**

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Introduction Tracheostomy is increasingly being performed in neonates with chronic respiratory conditions. While it facilitates their optimum ventilatory management and discharge, outcome data is limited.

Aims & Objectives To describe the clinical profile and outcomes of tracheostomized neonates.

Materials & Methods We reviewed case records of tracheostomized neonates (January 2017-June 2024). We retrieved demographic, clinical, mortality, and morbidity data from hospital and outpatient records, until the latest follow-up.

Results During the study period, 19 neonates underwent tracheostomy for prolonged respiratory support: bronchopulmonary dysplasia (BPD; n=11, 57.9%) and airway anomaly (n=6, 31.6%). In BPD subgroup, the median (IQR) birth gestation and weight were 27 (25-29) weeks and 780 (640- 900) grams. Of these, three (27.2%) infants were weaned to room-air at 1, 15, and 45 days, post-tracheostomy. Six (54.5%) infants died before discharge. Of the remaining five infants who survived, four (80%) required repeat hospitalization, and two (40%) died at the latest follow-up. For the airway anomaly subgroup (n=6), the median postnatal age at tracheostomy was 2 (1-71) days. Two infants were weaned to room-air at 15 days and 5.5 months post-tracheostomy. Two (33.3%) infants died before discharge and two (33.3%) required rehospitalizations. One infant died at the latest follow-up.

One infant each in BPD and airway subgroup underwent decannulation at two and six years of age, respectively. Two term infants with diaphragmatic hernia required tracheostomy for prolonged ventilation. Of them, one died before discharge and one required repeated hospitalisations and is still tracheostomized.

Conclusion Tracheostomy may help some infants in weaning from prolonged ventilation. However, there is high in-hospital and post-discharge mortality, serious morbidities requiring rehospitalization, and complications like accidental decannulation. Larger studies are needed to refine indications of tracheostomy and optimum tracheostomy care.

48. Resistive Index as Prognostic Marker in Asphyxiated Neonates admitted in Tertiary Care NICU – A Prospective Cohort Study.

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Objective: To evaluate the role of Resistive index measured by cranial Doppler ultrasonography in predicting the risk of death/ abnormal neurodevelopmental outcomes in term neonates with hypoxic ischemic encephalopathy.

Methods: We enrolled 50 term asphyxiated neonates with hypoxic ischemic encephalopathy and measured resistive index within 72 hours from the anterior cerebral artery. Participants underwent tone and developmental assessment at 6-12 months of age.

Results: Among the 50 neonates, 25 (50%) had abnormal resistive index (<0.56 or >0.80). Presence of abnormal resistive index increased the risk of death/ abnormal neurological outcomes at 6-12 months [RR (95% CI): 7.5 (2.0, 8.6), P<0.01].

Conclusion: An abnormal resistive index is associated with death/ neurodevelopmental impairment in neonatal hypoxic ischemic encephalopathy.

Keywords: Cranial ultrasound, Mortality, Neurodevelopment, Outcome.

49. Neonatal Septic Arthritis: Clinical Profiles, Microbiological Patterns, and Key Outcome Predictors

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Introduction: Neonatal septic arthritis, though rare (0.6 per 1,000 live births in India), leads to significant morbidity. This study highlights the importance of early diagnosis and treatment to improve outcomes and minimize complications.

Aims & Objectives: To assess the clinical profile and factors associated with unfavorable outcomes in neonates with septic arthritis.

Methodology: This nested case-control study was conducted in the Neonatology Department, ICH, Chennai, from January 2021 to August 2024. Neonates with septic arthritis were included, excluding those with major skeletal anomalies. Data on antenatal risk factors, gestational age, delivery mode, NICU stay, antibiotic use, joint involvement, cultures, organisms, and outcomes were analyzed. Comparisons between favorable and unfavorable outcomes were made using chi-square tests for categorical variables and t-tests or Mann-Whitney U tests for continuous variables.

Results: Among 64 neonates (51.6% males, 48.4% females), 34.4% were preterm and 65.6% were term. Ten neonates had birth weights <1500g, and 16 weighed between 1500–2500g. NVD occurred in 60.9%, and LSCS in 39.1%. Risk factors included PPROM (17.2%), perinatal asphyxia (6.3%), NICU stay >3 days (29.7%), prior sepsis treatment (18.8%), and invasive procedures (15.6%). A total of 78 joints were affected, mainly knees (43.8%) and hips (42.2%). Blood cultures were positive in 32.8% and joint aspirates in 21.9%, mostly revealing Staphylococcus aureus. Surgical interventions (62.5%) included arthroplasty and aspiration. There were 3 deaths (4.7%) and complications such as osteomyelitis (12 cases). Treatment >14 days was linked to unfavorable outcomes (OR: 0.105, p=0.034), while early treatment showed a non-significant trend toward favorable outcomes (OR: 3.89, p=0.165).

Conclusion: Early diagnosis and timely treatment are critical to improving outcomes in neonatal septic arthritis.

Keywords: Neonatal septic arthritis, morbidity, treatment timing, risk factors, outcomes, Staphylococcus aureus, unfavorable prognosis.

50. **Clinical Profile of Urinary Tract Infection in Neonates with Suspected Sepsis: Efficacy of Dipstick Testing as a Diagnostic Tool**

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Background: Neonatal urinary tract infections (UTIs) are significant contributors to neonatal morbidity, particularly when coupled with suspected sepsis. The early and accurate diagnosis of UTIs in neonates is crucial due to the potential for rapid disease progression and severe outcomes. Given the often subtle and non-specific presentation of UTIs in neonates, this study seeks to evaluate the clinical profile of UTIs in neonates with suspected sepsis and assess the efficacy of dipstick testing as a rapid and reliable diagnostic tool.

Methods: A prospective observational study was conducted at a tertiary care hospital in Karnataka over 18 months. Sixty-four neonates admitted to the Neonatal Intensive Care Unit (NICU) with suspected sepsis were included. Detailed demographic and clinical data were collected, along with the results of diagnostic testing, including dipstick tests, urine microscopy, and urine culture. Statistical analyses were performed to determine the diagnostic accuracy of the dipstick test and to identify potential clinical predictors of UTIs.

Results: The study cohort consisted of 42 males (65.6%) and 22 females (34.4%). The majority were term neonates (68.75%). Birth asphyxia (34.38%) and prematurity (18.75%) were the most common reasons for NICU admission. Dipstick testing demonstrated a sensitivity of 80% and specificity of 85%, indicating its utility as a rapid screening tool for UTIs in this population. Logistic regression analysis revealed that birth asphyxia and prematurity were not statistically significant predictors of UTI in this cohort.

Conclusion: UTIs are prevalent in neonates with suspected sepsis, particularly among those with birth asphyxia and prematurity. While dipstick testing is not a substitute for urine culture, it provides a quick and reliable initial diagnostic tool that can facilitate early intervention and improved outcomes in neonatal UTIs.

Keywords: Neonatal UTI, suspected sepsis, dipstick test, urinary tract infection, neonatal intensive care unit, diagnostic tools

51. ROLE OF CORD BLOOD GAS ANALYSIS IN PREDICTING RESPIRATORY MORBIDITY AMONG NEONATES

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INTRODUCTION AND OBJECTIVE : Blood gas analysis is a point of care testing method, which provides comprehensive data about acid base analysis, ventilation and oxygenation status. *Primary objective*-Assessing the role of cord pH and base excess in predicting respiratory morbidity – Delayed transition, Transient tachypnoea of newborn, Meconium aspiration syndrome, respiratory distress syndrome. *Secondary objective* was to identify the subgroup of base excess and pH that was linked to higher respiratory morbidity and predicting invasive or non- invasive respiratory support.

MATERIALS AND METHODS We enrolled 150 inborn neonates at Dr Mehta's Multispeciality Hospital in study from June 2022 to June 2023. The sample was collected within 15 minutes after birth from doubly clamped 20cm segment of isolated umbilical cord and sent for analysis. Umbilical cord blood gas measurements included the pH, pO_2, pCO2, bicarbonate and base excess. For the purpose of analysis, cord blood pH and base excess measured were divided into 4 sub-groups- for pH: group A->7.25, group B-7.1-7.24, group C- 7-7.1, group D- <7 and for base excess: A>-4, B -4 TO -8, C -8.1 TO -12, D <-12 mmol/L. Statistical analysis was done by the statistical software STATA 11.0. ROC curves were generated to determine the optimal cut-off to predict respiratory morbidity.

RESULTS

- Mean pH was 7.25 ± 0.83, pO2: 22.29 ± 6.43, pCO2: 50.55 ± 12.58, HCO3: 22.47 ± 2.45, base excess: -5.80 ± 2.82 mmol/L.
- Respiratory morbidity was present in 79 (53.7%) neonates. Amongst those with respiratory morbidity, delayed transition was present in 34 (22.67%), RDS in 24 (16%), TTN- 16 (10.6%) and MAS- 5 (3.3%).
- Analysis of subgroups of pH showed 25.6% in group A ,85% in group B and all neonates in group C and D had respiratory morbidity. There was no respiratory morbidity in base excess group A. 81% in base excess group B and all neonates in group C and D of base excess had respiratory morbidity.
- ROC curve showed a cut-off of pH < 7.24 {sensitivity-77.22%, specificity -77.46% and cut-off of BE < -4.15 {sensitivity-100%, specificity-84.5%} for predicting respiratory morbidity.

- Among the study population, the need for nasal oxygen was present in 78(52%), mechanical ventilation in 20(13.3%), non-invasive ventilation (CPAP/HFNC) in 40(26.67%).
- The need for respiratory support was present in 32(35%) neonates in pH subgroup A, where majority required nasal oxygen. 49 neonates (62.8%) in pH subgroup B required respiratory support with increasing need for non-invasive and mechanical ventilation. There was no requirement of respiratory support in BE subgroup A, whereas 50(80%) neonates in subgroup B were in need of respiratory support. All neonates in subgroup C and D of pH and base excess needed respiratory support and had prolonged duration of respiratory support.

CONCLUSIONS Cord blood arterial pH and base excess are significant predictors of respiratory morbidity, with base excess being more sensitive and specific. There was increased occurrence of respiratory morbidities with decreasing pH and base excess values.

52. Target oxygen saturations soon after delivery in late preterm neonates - A prospective observational study

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Background

There is currently no separate data on the target oxygen saturation levels for preterm neonates during the first 10 minutes of life.

Objective

To develop a nomogram for target oxygen saturation levels during the first 10 minutes of life in late preterm neonates.

Methods

We included all preterm neonates born at 34 to 36+6 weeks' gestational age by caesarean delivery. Exclusion criteria included neonates who required resuscitation, continuous positive airway pressure (CPAP) or oxygen supplementation in the first 10 minutes of life based on clearly pre-defined indications.

Delayed cord clamping for one minute was performed in all neonates. Pulse-oximeter probe (Masimo) was applied to the right upper limb. Once the pulse-oximeter reading was reliable, defined as good plethysmography waveform for one full screen length, oxygen saturation, heart rate and perfusion index (PI) values were recorded at 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 minutes of life. Baseline and demographic characteristics and clinical details of the study infants were collected prospectively.

Results

We included 200 neonates. The mean (SD) gestational age and birth weight were 35.3 (1.2) weeks and 2275 (496) g respectively. The median (IQR) of oxygen saturations at 2, 3, 4, 5, 6, 7, 8, 9 and 10 minutes were 77 (70-84), 81 (74-87), 85 (78-90), 88 (82-92), 90 (85-93), 92 (88-95), 93 (90-96), 94 (91-96) and 95 (93-96) respectively. The median (IQR) time to reach ≥ 80, ≥ 85 and ≥ 90% saturations are 4 (3-5), 5 (3-6) and 6 (4-7) minutes respectively.

Conclusion

We have created percentile charts for oxygen saturation levels during the first 10 minutes of life in late preterm neonates.

53. **Biotinidase Deficiency: A Case Series Highlighting the Importance of Early Diagnosis and Lifelong Management**

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Background: Biotin is an essential vitamin necessary for the function of four key carboxylation enzymes. Biotinidase, the enzyme responsible for recycling biotin, can be deficient in some individuals, leading to severe health issues, including seizures, developmental delays, and potentially fatal outcomes in profound cases. Early diagnosis through newborn screening is crucial to prevent these complications. This study examines the spectrum of biotinidase deficiency in neonates and children diagnosed at our institute between 2016 and 2024.

Case Series: This series reviews 13 patient profiles diagnosed with biotinidase deficiency, with 9 identified through newborn screening and 4 diagnosed after symptom onset. *Profile 1* details six neonates who were detected via decreased biotinidase optical density on newborn screening, confirmed by serum biotinidase activity testing, and successfully treated with biotin supplementation, resulting in normal development. *Profile 2* discusses three neonates, including a set of twins, who had elevated C5OH levels on newborn screening and were diagnosed through algorithmic testing; all showed normal development with biotin supplementation. *Profile 3* focuses on three infants who presented with seizures unresponsive to antiepileptics and were later diagnosed with biotinidase deficiency, achieving normal development and no further seizures after starting biotin therapy. *Profile 4* describes a 7-year-old child, who had been on treatment since day 40 of life but experienced alopecia and dermatitis after discontinuing biotin supplementation for a month; these symptoms improved upon resuming therapy.

Conclusion: This series underscores the critical importance of early diagnosis and lifelong biotin supplementation in managing biotinidase deficiency. The cases highlight the role of newborn screening in early detection and the necessity of continuous treatment to ensure normal development and prevent complications.

Keywords: Biotinidase deficiency, newborn screening, case series, early diagnosis, seizure, developmental outcomes.

54. INTERMITTENT VERSUS CONTINUOUS PHOTOTHERAPY FOR NEONATAL NON-HEMOLYTIC HYPERBILIRUBINEMIA IN NEONATES 28- 34 WEEKS OF GESTATIONAL AGE: A NON INFERIORITY RANDOMIZED CONTROL TRIAL (INTERRPT STUDY)

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Background & objectives: Phototherapy (PT) has become the standard of care for treating neonatal jaundice. This study was aimed to find out if intermittent PT (IPT) results in comparable rate of fall of bilirubin level to continuous PT (CPT) for preterm infants born at 28-34 weeks of gestation.

Methods: In this interim analysis of our non-inferiority trial, neonates 28-34 weeks gestation requiring PT were randomized to receive either IPT (six hour on and six hours off) or CPT (with minimum interruptions for feeding). Bilirubin was checked 24h hourly along with nursing, maternal satisfaction scores and skin condition scores (CTRI Registration No. CTRI/2024/06/068787).

Results: Total of 46 neonates' data was examined in this interim analysis. The rate of fall of bilirubin in CPT was 0.11 (0.02-0.2) gm/dl/hr whereas in IPT group was 0.09 (0.01-0.17) gm/dl/hr. The delta of the rate of fall of bilirubin was within the pre-defined inferiority limits. There was no significant change in the duration of PT. Maternal satisfaction favoured the IPT group, and the nurses opined that IPT was feasible to implement as well.

Interpretation & conclusions: IPT was non-inferior to CPT in reducing the rate of fall of bilirubin levels in preterm neonates with 28-34 weeks.

55. Role of Serum 1,3 Beta D Glucan assay as a diagnostic marker of invasive fungal infection in preterm neonates

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Introduction: Fungal sepsis is highly prevalent in low birth weight neonates with incidence rate of 0.4 – 2 per 1000 live births i.e 3.8 % to 12.9% among low birth weight neonates. 1,3 Beta D Glucan (BDG) is a sensitive marker for early diagnosis of invasive fungal infections in preterm neonates. This pilot study was undertaken to assess the performance of BDG test for diagnosis and monitoring of invasive fungal infections.

Aims and objectives

- Fungal infections are difficult to diagnose due to stringent isolation methods and high rate of false negative culture reports. The diagnostic assay of 1,3 Beta D Glucan (BDG) is new tool for early diagnosis of invasive fungal infections.
- The aim of our study is to assess the utility of BDG as an early marker to diagnose, monitor response and prognosticate fungal infections in preterm neonates.

Methods

- Prospective observational study. Study period - 1st Jan 2023 to 31st March 2024.
- Study population included preterm neonates (<37 weeks of gestation) with clinically suspected fungal sepsis (>72 hours of birth).
- The neonates included in the study were screened and proved negative for bacterial infections.
- Urine for fungal - sent of all neonates included in the study.
- Neonates with persistent signs and symptoms like thermal instability, apnea, bradycardia, feed intolerance, hemodynamic instability, lethargy and hyperglycemia - screened for fungal infections
- 1,3 Beta D glucan performed by Enzyme Immunoassay method (protease zymogen based colorimetric assay).
- BDG levels - >/=80pg/ml : Positive , >160 pg/mL - severe fungemia.
-

Results

- 50 preterm neonates (24 males, 26 females) with a median gestation age of 32 weeks and median B.wt of 1200 gms, included in the study who fulfilled the inclusion criteria.
- Out of 50 neonates 22 tested positive (44%) for BDG levels. 14 neonates had BDG levels (80-160 pg/ml) and 8 neonates had higher BDG levels (>160 pg/ml)
- Patients on prolonged mechanical ventilation or CPAP (>1week), prolonged systemic antibiotic exposure (>72 hours), prolonged total parenteral nutrition, persistent

thrombocytopenia and raised CRP were risk factors for invasive fungemia correlating with higher BDG levels.

- Out of 22 neonates,17 neonates responded to 1st line antifungal drug (Fluconazole). Follow up BDG levels decreased after 2 weeks of therapy.
- 5 responded to 2nd line antifungal drugs (3 to Amphotericin B, 2 to voriconazole).
- Urine for fungal - positive for candidiasis in 2 patients with high BDG levels (>160 pg/ml)
- Out of 22 patients, 4 patients succumbed who had severe fungemia with high BDG levels (>160pg/ml).

Conclusion: 1,3 Beta D Glucan assay is useful for the early detection of invasive fungal infection in preterm neonates and a prognostic marker for monitoring antifungal treatment efficacy. Accurate diagnosis and therapeutic decisions should be based on combining Beta D glucan assay with other clinical, radiological and microbiological findings.

56. **Assess the outcome following the use of Heated Humidified Nasal cannula oxygen in Preterm babies less than 37 weeks with respiratory distress**

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INTRODUCTION Neonatal medicine is transforming towards minimally invasive or non-invasive treatment modalities in the last two decades.This approach has clearly reduced morbidity,mortality and has improved our survival rates in newborn. HHHFNC as a primary mode of respiratory support in management of preterm infants is being increasingly used across many NICU both in developing and developed nations .In our study we had an opportunity to assess the effectiveness and advantages of HHHFNC in preterm babies <37 weeks when used as a primary mode of respiratory support.

AIMS AND OBJECTIVES The main objective of our study is to "Asses the clinical outcomes following the use of Heated Humidified Nasal cannula oxygen in Preterm babies less than 37 weeks with respiratory distress"

METHOD This is a prospective observational study done over a period of 1 year. We recruited 77 preterm babies born <37 weeks of gestation with respiratory distress requiring respiratory support.Data was statistically assessed.

RESULTS We observed the use of SILVERMAN ANDERSON SCORING system as an effective tool for deciding the primary mode of respiratory support in preterm.50.6% had received HFNC as primary mode of respiratory support .It was more successful in Post INSURE babies.Babies on HFNC as a primary mode of support had a shorter hospital stay and established full enteral feeds at a faster pace.In our group there was no complications such as nasal trauma, pneumothorax.

CONCLUSION We strongly recommend HFNC as primary mode of respiratory support when SILVERMAN ANDERSON SCORING <7, Preferable after INSURE in preterm babies.It is cost effective , shortens the hospital stay.

KEYWORDS HFNC, RESPIRATORY DISTRESS, PRETERM.

57. **Feasibility Study On Handheld Doppler's Accuracy For Heart Rate Assessment Versus Electrocardiogram During Neonatal Resuscitation**.

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Background : ILCOR consensus guidelines recommended ECG as the gold standard for measurement of heart rate in newborns during resuscitation. Traditionally auscultation is practiced as standard method of measuring heart rate even though pulse oximetry has been routinely employed in most birthing centres as point of care. We employed handheld Doppler as an alternative for heart rate measurement expecting similar accuracy to ECG.

Aim: To perform a feasibility study whether Handheld Doppler HR measurement is as accurate as ECG during neonatal resuscitation.

Methodology: A single centre analytical observational study enrolling newborns of Moderate to Late preterm-$32^{0/7}$-$36^{6/7}$ and Term newborns $37^{0/7}$-$41^{6/7}$ weeks of gestational age undergoing caesarean deliveries in my institute. We employed measuring HR using ECG, and Handheld Doppler, and for saturation we employed MASIMO monitor. We recorded the measurements at 6 seconds interval up to 120 seconds for newborns not requiring PPV and 300 seconds for newborns requiring PPV.

Results: We enrolled 20 newborns for assessing the feasibility of conducting a larger study. We found a good correlation with variability of ±5 beats/min between the ECG and Handheld Doppler for HR measurement. The median time acquisition for picking up the audible HR on HR_{HD} was 13s (10, 18) and HR_{ECG} was 55s (35, 96). (Out of 20 patients, 25% (5) of the newborns experienced challenges in positioning the ECG electrodes, while 35% (7) encountered difficulties in detecting the plethysmograph wave signal on pulse oximetry. Among the remaining 75% (15), we noted an excellent correlation on Bland Altman analysis of HR_{HD} and HR_{ECG}..

Conclusion: This feasibility research comparing portable Doppler and ECG for heart rate measurement during neonatal resuscitation indicates potential for development into a comprehensive analytical cross-sectional observational study. This research could yield significant insights on the most effective techniques for monitoring newborns during resuscitation efforts.

Keywords: Electrocardiogram (ECG), Handheld Doppler (HD), Positive Pressure Ventilation (PPV).

58. A 20-Year Retrospective Analysis of Clinical Outcomes in Neonates with Congenital Diaphragmatic Hernia (CDH)

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Introduction: Congenital Diaphragmatic Hernia (CDH) is a life-threatening condition in neonates, marked by pulmonary hypoplasia and pulmonary hypertension. Despite advancements in neonatal intensive care, CDH continues to be associated with significant morbidity and mortality. This study aims to analyse clinical outcomes and factors influencing survival in neonates with CDH over a 20-year period (2004-2024).

Aims & Objectives: The objective of this study is to evaluate survival rates, oxygenation index (OI) as a predictor of outcomes, and the impact of factors such as birth weight, gestational age, and complications like sepsis, pneumothorax, and pulmonary hypertension on the prognosis of neonates with CDH.

Material & Methods: This retrospective study reviewed the medical records of neonates diagnosed with CDH from 2004 to 2024. Data collected included gestational age, birth weight, Apgar scores, OI, and major complications (sepsis, pneumothorax, inotrope use). Statistical analysis was performed using t-tests for continuous variables and chi-squared tests for categorical variables, with a significance level of$p<0.05$.

Results: Of the 63 neonates included, 50 (79.4%) survived. Median gestational age and birth weight were significantly higher in survivors (38 weeks and 2.95 kg) compared to non-survivors (36.5 weeks and 2.2 kg, $p<0.05$). OI was a significant predictor of survival, with a cut-off of 17 (AUC=0.95). Severe pulmonary hypertension was present in all non-survivors, while 20% of survivors had severe pulmonary hypertension. Pneumothorax and inotrope use were also significantly associated with mortality ($p<0.01$).

Conclusion: The survival rate of neonates with CDH has improved over the past 20 years, with OI serving as a reliable predictor of outcomes. Early detection, timely surgical intervention, and aggressive management of pulmonary hypertension are crucial to improving survival in this population.

59. TO DESCRIBE THE OUTCOMES OF NEONATES WHO HAD BRACHIAL PLEXUS INJURY DUE TO BIRTH TRAUMA.

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Introduction: Brachial plexus injuries (BPIs) are significant complications that can occur during childbirth, especially in cases with shoulder dystocia. The incidence of neonatal brachial plexus palsy (NBPP) varies with estimates ranging from 0.9 to 1.5 per 1,000 live births in recent years. While many infants experience spontaneous recovery within the first few months of life, a substantial proportion may face long-term functional impairments if not properly managed.

Aim of the study: To describe the outcomes of neonates who had brachial plexus injury due to birth trauma.

Materials and methods: This study was conducted in the Department of neonatology at Sri Ramachandra Institute of higher education and research between January 2020 - July 2024. Neonates who had brachial plexus injury due to birth trauma were included in the study. Data was collected through hospital medical records. Demographic data, grade of injury and treatment responses were collected and entered in an excel sheet. Brachial plexus injury was classified according to NARAKA'S classification.

Results: A total of 27 neonates were enrolled during the study period. Mean birth weight was 3.37kg and mean gestational age was 39 weeks. Among them, 77.8% were primigravida. 40.7% of mothers had assisted vaginal delivery. Only on neonate delivered by LSCS had Brachial plexus injury. As Per the NARAKAS classification, 87.1% were in group 1, 11.1% in group 2 & 7.4% in group 3. The mean follow-up period was 24 months. Twenty neonates (74%) recovered spontaneously; five neonates (18.5%) had sequelae without functional impairment, two neonates (7.4%) had sequelae with functional impairment.

CONCLUSION: Permanent dysfunction is seen in neonates with NARAKAS group 3 and this group needs emphasis on regular follow up and early identification by MRI and timely interventions to improve outcomes.

60. Salivary cortisol levels and Premature Infant Pain Profile (PIPP) assessment in response to painful stimuli during Kangaroo Mother Care (KMC) in low birth weight babies–A Randomised Control Trial

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Introduction: Touch and physical contact with babies impact HPA activity, particularly during crucial development periods. KMC has been investigated as non-pharmacological intervention to reduce stress in neonates.

Aim and Objectives: To compare the level of salivary cortisol and PIPP score following a painful stimuli in LBW babies put on KMC 1 hour prior to giving painful stimuli compared to those not put on KMC prior to giving same intensity of stimulus .

Material and Methods: A cohort of 60 LBW babies were recruited in the postnatal wards and neonatal intensive care unit of Swami Dayanand Hospital, Delhi and randomised in two groups: first group who received KMC and second group did not receive KMC one hour prior to and one hour after giving painful stimuli. PIPP score was assessed at time of heel prick and infant's saliva was collected thrice, at baseline, 30 minutes and 1 hour post heel prick. The data was analyzed using the IBM Statistical Packages for Social Sciences, SPSS software version 22.

Results: . The median ± SD of salivary cortisol at0 min, 30 min and 1 hour was found to be significantly lower among neonates exposed to KMC than neonates not exposed to KMC (2.5 vs 1.7 ng/ml,p=0.001,8.4 vs 5.8, p=0.001 and 6.7 vs 4.9 p=0.026 respectively) . However no significant difference was observed in PIPP scores between the two groups.

Conclusion: The study highlights that neonates on KMC have significantly lower salivary cortisol levels compared to the neonates who were not on KMC. This validates use of KMC as an effective non pharmacological method to reduce stress in neonates.

61. BLOOD CULTURE PROFILE IN NEONATAL SEPSIS AT A TERTIARY CARE CENTRE

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INTRODUCTION Neonatal Sepsis is a clinical syndrome of a dysregulated host immune response to bloodstream infection in first 28 days of life. Broadly classified as Early onset sepsis (<72hrs) from maternal genital tract and late onset sepsis (>72 hrs) due to nosocomial infections. Nearly 1/3 of neonatal mortality is due to sepsis.

OBJECTIVE To determine the bacteriological profile of microbial isolates from newborns suspected with sepsis in CMCH , to aid in the choice of early empirical antibiotics.

METHODOLODY An analysis was conducted on all blood culture reports obtained between 1st of March to 31 st of August from newborns admitted in NICU, CMCH. Blood cultures collected and incubated at appropriate temperatures were analysed for the presence of isolates and their antibiotic sensitivity also tested.

RESULTS A total of 824 neonates admitted in our newborn care unit, of which 512 newborns with clinical sepsis were admitted. Blood culture positive 116 (22.6%) in newborns. The most frequently isolated organism was coagulase negative staphylococcus (44 .1%) , Klebsiella pneumonia (18.4%) followed by E.coli (12.2%).

CONCLUSION CONS found to be m/c organism in neonatal sepsis. A high degree of resistance of organisms to penicillin and cephalosporins warrants strict antibiotic stewardship to prevent multidrug resistance in future.

62. Estimation of economic cost and out of-pocket expenditure (OOPE) in neonatal intensive care unit in a tertiary care public funded hospital.

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Objectives: To compute the cost of neonatal intensive care per neonate in neonatal intensive care unit (NICU) Levels 1, 2 and 3 from the health system perspective and OOPE incurred by the families of neonates admitted to NICU.

Participants: Neonates admitted to level 1,2, and 3 of NICU (50 admissions to each level of NICU) between September 2022 to September 2023

Method: Systematic random sampling was done from the admission registers of each level until the sample size was met. Bottom-up method of cost estimation and micro-costing was done from health system perspective. Parents were interviewed twice weekly for data on OOPE and catastrophic health expenditure.

Main outcome measures: Annual recurring cost of NICU, cost of human resources, capital resources, investigations, medications and consumables, cost of health care per neonate incurred by the hospital, out-of-pocket expenditure per neonate incurred by the parents. (Note: this is a public hospital where neonatal care including most medications and consumables are provided free of cost)

Results: The annual recurring cost of running an NICU was Rs. 8,52,15,082 and human resources contributed to the majority of this expenditure 64%. The median cost of care per neonate as stratified based on level of NICU admission is as follows: Level-1: Rs. 14,085 (8,789: 19,619) per neonate, Level-2: Rs. 39,304 (23,567; 65,841) per neonate, Level-3: Rs. 1,20,754 (59,179; 3,03,465) per neonate. Families of neonates admitted to level-1 incurred median OOPE of Rs. 5,831 per neonate and those admitted to level-2 and level-3 spent Rs. 7,062 and Rs. 18,906 per neonate respectively out-of-pocket. Fifty-five percent of families of infants admitted to the NICU incurred catastrophic health expenditure (health expenditure >10% of the annual income).

Conclusion: The study revealed that the annual recurring cost of running the NICU was significantly driven by human resources. The cost of care for preterm neonates was notably higher than for term neonates. Families, particularly from the upper lower socioeconomic class, faced substantial out-of-pocket expenses and catastrophic health expenditure. These findings highlight the need for increased governmental support for NICU care to reduce financial burdens on families.

63. The impact of combined administration of surfactant and budesonide compared to surfactant alone on duration of ventilation and mortality with SNAPPE II score in extreme/early preterms with respiratory distress syndrome(RDS)

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Introduction: Respiratory Distress Syndrome (RDS) is a significant contributor to morbidity and mortality in premature infants, primarily resulting from insufficient surfactant production. The Incidence of RDS in <1500gms neonates is 40.4%, Overall incidence of RDS in premature neonates is 30%. The deficiency of surfactant causes alveolar collapse and diminished lung function, heightening the risk of chronic lung disease. Recent research indicates that the combined use of intratracheal budesonide and surfactant may improve lung function and reduce mortality and morbidity rates related to RDS.

Objectives: To compare the effects of intratracheal surfactant and budesonide administration with surfactant alone on the duration of ventilation and hospital stay, evaluate outcomes based on mortality using the SNAPPE II score during NICU admission, and determine the need for a second dose of surfactant.

Methodology: A single-blind randomized controlled trial was carried out on preterm neonates with RDS admitted to the NICU at Old GGH, Vijayawada, from September 2024 to October 2024. Total of 50 newborns were studied, among which 25 received budesonide and 25 received received surfactant. After IEC approval, the study was carried out.

Results: In budesonide group, the mean ventilator stay was 3.13 $\pm$ 1.5 days. BPD was assessed only in 6 cases. The mean SNAPPE score II at Day 1 was 28 $\pm$ 7.13. The mean SNAPPE score II at Day 5 was 23 $\pm$ 3.13. In this group 3 preterm neonates received second dose of budesonide. In the surfactant group, the mean ventilator stay was 5.5 $\pm$ 1.3 days. BPD was assessed only in 12 cases. The mean SNAPPE score II at Day 1 was 43.53 $\pm$ 19.17. The mean SNAPPE score II at Day 5 was 36.66 $\pm$ 12.13. In this group 6 preterm neonates received second dose of surfactant.

Conclusion: The mean SNAPPE score II at day 5 was significantly reduced in babies who received budesonide, thereby decreasing the risk of mortality. The mean duration of ventilator stay has been significantly reduced in budesonide group.

64. Early initiation of breastfeeding after delivery: A Quality Improvement initiative in a tertiary care hospital, south India

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Introduction WHO recommends breastfeeding within the first hour to reduce neonatal mortality. NFHS-5 shows increased institutional deliveries to 88.6%, but early initiation of breastfeeding remains at 41.8%, with exclusive breastfeeding at 63.7% at six months age.

Objectives

1. To assess Delivery to First Breastfeed (DEL-FBF) interval after Quality Improvement (QI) process and compare it with historical data in stable (≥35weeks) neonates.
2. To assess exclusive breastfeeding rate at 6 months.

Material & Methods This QI study was conducted in the labour rooms and operation theatres of a tertiary care center over 14 months. Reasons for delayed breastfeeding initiation were analyzed using fishbone diagram and process-flow mapping. Five sequential Plan-Do-Study-Act cycles were introduced to test the change of ideas. Rapid cycle aspect of PDSA began with piloting a new process, followed by examining results and responding by problem solving. Trends and shifts in DEL-FBF interval were tracked using run charts and interrupted-time-series analysis. Follow-up for exclusive breastfeeding status at 6 months was recorded and analyzed.

Results The study included 600 mother-baby dyads: 100 in baseline, 300 in PDSA and 200 in sustenance phase. Median DEL-FBF interval improved from 75(61,92) minutes to 25.5(14,41) minutes during the intervention phase. Consistent improvement was noted despite higher proportion of low birth weight and lower gestational age babies in intervention and sustenance phase. Rate of first hour initiation of breastfeeding increased from existing 22% to 90%. Results were similar during sustenance phase without any additional resources. Exclusive breastfeeding rates increased from 67% to 83% at six months.

Conclusion A cost-effective QI approach, employing PDSA cycles and stakeholder involvement, improved DEL-FBF interval through education, policy adherence and feedback for nurses and residents. It also correlated with improved 6-month exclusive breastfeeding rates.

65. TO STUDY THE UTILITY OF PLETH VARIABILITY INDEX (PVI) AS NON- INVASIVE PARAMETER TO PREDICT FLUID RESPONSIVENESS IN VENTILATED NEONATES WITH SHOCK- A DIAGNOSTIC EVALUATION STUDY.

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Kanchikamakoti CHILDS trust hospital, Chennai

Introduction: Optimal fluid therapy in neonates is important and influences outcomes especially prediction of fluid responsiveness in neonates with shock is a challenge. We evaluated performance of Pleth variability index (PVI) in predicting fluid responsiveness using standard 2dEcho parameter Stroke volume index (SVI).

Aims and objectives: To Evaluate diagnostic performance of PVI in ventilated neonate with shock.

Material & Methods: Total 55 ventilated neonates in shock with gestational age 28-44wks, requiring fluid bolus were included over 2 years study duration. PVI is continuous index of respiratory variation in pulse oximeter plethysmography waveform amplitude. SVI is 2d echo parameter measured by (π(D/2)2 X Velocity time integral). SVI and PVI were measured before and after 10ml/kg saline bolus. 10% rise in Stroke volume after bolus was used to classify as fluid responders.

Results: Fluid responders 38(69%), non-responders 17(31%). Paired T test showed mean(±SD) prebolus PVI 23.18(± 3.76), post bolus PVI 18.89(±3.02) , p value 0.00. ROC curve showed Prebolus PVI, post bolus PVI and post bolus SVI in predicting fluid response with respective AUC 0.755 (0.61-0.90), 0.703 (0.55-0.85), 0.703 (0.55-85). Pre bolus PVI of 24 had sensitivity (68.42%) and specificity (82.35%), PPV (89.6%), NPV 53.8%.

Conclusion: PVI before fluid bolus administration can be used to predict fluid response in ventilated neonates with shock.

66. **"GutForecast" – A Prediction Model for Necrotising Enterocolitis in Preterm and Very Low Birth Weight Neonates – An Observational study**

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Abstract

Neonatal necrotizing enterocolitis (NEC) primarily affects preterm and very low birth weight (VLBW) neonates, leading to high morbidity and mortality. We aim to build a reliable prediction model to predict the risk of NEC in preterm and VLBW neonates.

This is a Retrospective observational study conducted on VLBW <1.5 kg and Preterm <32 weeks babies A total of 281 babies were included in the study. Univariate logistic regression was conducted to assess significance of following risk factors for NEC stage 2 and 3 – gestational age, birth weight, SGA status, head circumference at birth, sex, maternal age, parity, GDM, Hypertensive disorders of pregnancy, maternal infection, chorioamnionitis, abruption of placenta, Antenatal corticosteroids, need for resuscitation, doppler abnormalities, Anemia during pregnancy, mode of delivery, day of life of initiation of feeds, fortification, culture positive sepsis, hypoalbuminemia, mechanical ventilation >72 hours, inotrope requirement >48 hours and PRBC requirement. A prediction model was built through multivariate logistic regression and Wald's forward selection model, including all significant variables. Accuracy of the prediction model was assessed.

A total of 281 neonates were included of which 34 (12.09 %) had NEC Stage 2 and 3. Multivariate logistic regression and Wald's forward selection model of the significant revealed the following prediction model. Risk of NEC Stage 2 and 3 = 0.839 - 3.375 (Birth Weight) – 2.046 (Antenatal Corticosteroids) + 2.878 (Need for Resuscitation) + 2.233 (Anaemia during Pregnancy) + 2.431 (Doppler abnormalities) – 1.238 (Exclusive breastfeeding). Accuracy of the prediction model was found to be 95.15%.

This study provides a vital tool for NEC risk assessment in this population, potentially improving early interventions.

67. COMPARISON OF NASAL HFO AND NIPPV IN NEONATES FOLLOWING EXTUBATION - A RCT - HiNi Study

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INTRODUCTION: Nasal HFOV delivers the combined advantages of HFOV and NCPAP – high CO_2 removal, less volume/ barotraumas, non-invasive and increased FRC. It has advantage over NIPPV as it doesn't need synchronisation. Present study explores the efficacy and safety of NHFOV as mode of non-invasive ventilation post extubation compared to NIPPV.

AIMS: To compare NHFOV and NIPPV as mode of non-invasive ventilation following extubation.

Primary objective – Reintubation rate with 72 hours post extubation.

Secondary efficacy objectives – BPD, ROP, Steroids use, Blood gas parameters, air leak syndrome, IVH post extubation.

Secondary safety objectives – Nasal injury, apnea, feed interruption.

MATERIAL AND METHODS: Neonates were randomised post-extubation to NHFOV or NIPPV for a minimum period of 48 hours. Post extubation neonates who had increased distress (SAS/DOWNE score > 6), desaturation, apnea or meeting NIV failure criteria were reintubated.

Sample size: Considering the NIPPV failure rate of 35%, we chose to study 74 subjects in each group in order to have 80% power to reduce the extubation failure rate from this baseline rate of 35 to 10% with a significance level of 0.05% (two-tailed).

Statistical analysis: For the primary outcome and dichotomous secondary outcomes, we calculated a risk difference between treatment groups. We used Chi-square tests to compare dichotomous outcomes and the appropriate parametric test (one-way ANOVA) or Mann-Whitney U test (Hodges-Lehmann median difference) to compare continuous outcomes. P values < 0.05 will be considered statistically significant.

RESULTS: Reintubation rate within 72 hours of extubation in NHFOV group (14.7%) although was less compared to NIPPV group (22.5%) but did not reach statistical significance 0.65 (0.23-1.84) $p = 0.52$. None of the secondary efficacy and safety outcomes differ significantly between the two groups.

CONCLUSION: Reintubation rate within 72 hours of extubation were not statistically different in NHFOV compared to NIPPV. NHFOV as a respiratory support post extubation has same efficacy and safety profile as NIPPV.

INNOVATION POSTERS

P1

Title: Bubble T piece Resuscitator: Safer and Affordable solution to neonatal resuscitation

Authors: Dr Rashi Gupta, Dr Satish Deopujari

Introduction: About 10% of neonates require assistance to transition smoothly to extrauterine life, with positive pressure ventilation (PPV) being the most critical intervention. Three main devices provide this support: flow-inflating bags (FIB), self-inflating bags (SIB), and T-piece resuscitators (TPR). TPRs are favoured for their consistent peak inspiratory pressures and positive end-expiratory pressure (PEEP), promoting lung fluid clearance and functional residual capacity (FRC) establishment. However, conventional TPRs have drawbacks, including complex setup, maintenance issues, and risk of excessive pressures leading to lung injury.

Methods and Results : To address these issues, a novel, cost-effective, and safer TPR device using water manometry for pressure regulation has been developed. This device features a manifold, ports for gas input, a PEEP valve, and a transparent bottle with a dipped tube acting as a PIP valve, eliminating frequent calibration needs. It ensures controlled pressure delivery, minimal training requirements, and reduced maintenance costs. Additionally, the bubbling mechanism aids in leak detection and proper mask placement, enhancing safety and effectiveness. The efficacy of this device has been demonstrated in laboratory settings.

Discussion: This device aims to make neonatal resuscitation safer and more accessible, especially in resource-limited settings.

P2 BROWNIE NOSE IN A NEONATE

Dr. M. Vinolia, Prof. Dr. M. Jayakumar, M.D . ,DCH., Dr. M. Ravisankar,M.D., Dr. N. Revathi, M.D.,
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A mechanically ventilated 11 days old baby developed hyper pigmentation over the nose, circumoral region and on the limbs.

This late preterm baby was delivered through emergency LSCS. Baby had a normal neonatal transition.At 99 hours of life, baby was received in level II care due to complaints of letharginess and feed refusal. Late onset sepsis was suspected, hypoglycemia ruled out. Treated with antibiotics. But, worsening respiratory distress with a rapid progression to shock and recurrent seizures occurred. Level III care provided with mechanical ventilation. Convulsions treated and shock corrected.

CSF analysis showed normal protein, mildly reduced glucose with no cells. CSF culture and gram stain was negative. Metabolic work up was normal. Hyperpigmentation was noticed just a few days before extubation.

Then, retrograde analysis was done. The mother had suffered from fever, arthralgia and swelling of arms and legs just few days before and after delivery. Mother's CBC showed neutrophilia and elevated LDH.

IgM Chikungunya turned out to be positive, both for the mother and the baby. Neonatal Chikungunya was confirmed. Baby was discharged on day 27 of life.

MRI, taken at one month of age showed, gliosis with cystic encephalomalacic changes noted in the white matter of bilateral fronto temporo parietal regions, corona radiata, centrum semi ovale with periventrivular sparing. Possibility of Chikungunya sequelae.

This is to emphasis the importance of being aware of the maternal conditions while treating the neonate. Chik sign is the striking post inflammatory hyperpigmentation over the centrofacial area, also known as brownie - nose.

P3 An unusual cause of persistent hyperthermia in a neonate : a rare case of Hypohidrotic Ectodermal dysplasia

Dr.Gowtham P S [1], Dr.Kannan D [2], Prof.Dr.Suresh Kannan.K [3]

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2- Assistant Professor, Department of Paediatrics, Government Namakkal Medical College

3- Professor and HOD, Department of Paediatrics , Government Namakkal Medical College

PLACE OF STUDY: NICU, Government Namakkal Medical College Hospital

SUB-SPECIALITY CATEGORY: Genetics (GENE)

INTRODUCTION:

The causes of persistent hyperthermia in a neoanate are myriad and pose challenges to the physician in its identification

CASE PRESENTATION:

A preterm neonate born to 3rd degree consanguineous parents was admitted with complaints of persistent fever. General examination showed vellus scalp hair, periorbital wrinkling, saddle nose, fully everted lips, prominent frontal bossing and eyebrows had no hair growth. History of similar complaints in the mother was present. Routine hematological and radiological workup for sepsis and other possible differential diagnosis turned out to be negative. A provisional diagnosis of Hypohidrotic Ectodermal dysplasia was made. Reassurance given and supportive management for temperature regulation initiated and also taught to the parents.

DISCUSSION:

Ectodermal dysplasias (ED) form a rare diverse group of inherited disorders characterized by a congenital defect in two or more ectodermal structures, one of which involves hair, teeth, nails, or sweat glands. A subtype of ED, Hypohidrotic Ectodermal dysplasia have classic signs of hypohidrosis and hyperthermia. Cause is attributed to mutations in the EDA, EDAR, and EDARADD genes and inheritance is commonly X-linked recessive pattern. Primary diagnosis is done clinically, subtype/syndrome may require trichogram or skin biopsy. Supportive management is done based on subtype of ED.

CONCLUSION:

Hyperthermia in a neonate is not always due to sepsis and associated causes, hence the physician should be alert to other possible causes

P4

A CASE OF TRANSIENT ABNORMAL MYELOPOIESIS IN A NEW BORN WITH DOWNS SYNDROME

Author: Thangadurai *** Co- Athuor : Ashok Raja**

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INTRODUCTION:

Children with downs syndrome (trisomy 21) have a unique predisposition to develop ALL and myeloid leukaemia of down's syndrome(ML- DS). It mostly develops before the age of 5 years and acute leukaemia is preceded by a clonal neonatal preleukemic syndrome called Transient Abnormal Myelopoiesis (TAM) .TAM affect 4-10% of neonates with downs syndrome.Mostly it resolves spontaneously over 3month.

CASE DISCUSSION:

A term newborn female baby was referred to our hospital on day1 of life with complaints of gastric bleeding. On examination baby was stable and had external features of downs syndrome. cbc showed persistently low platelet count. Peripheral smear study showed severe thrombocytopenia with atypical cells of 18%. Other investigations were normal,meanwhile karyotyping report confirmed trisomy 21. Bone marrow study and flowcytometry showed 14% blastoid cells. Child was treated with regular platelet transfusion and other supportive care continued. Oncologist opinion obtained and supportive care continued. Child was discharged and on followup,Child was asymptomatic and blood investigations were within normal limits.

CONCLUSION:

Around 10- 15% of neonates with down's syndrome have a diagnosis of TAM with blasts more than 10%. The mortality rate of TAM may be upto 20%.Our case had a complete remission. But the long-term outcome is yet to be studied. The child is still under follow up and the propensity of TAM to evolve into acute leukaemia is being followed up.

P5

POSTER INNOVATION -INTENSIVE CARE (IC)

PERFECT RESCUE-PICC LINE

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ABSTRACT

Catheter fracture is a rare but serious complication of a peripherally inserted central catheter (PICC). A newborn term baby born out of P2L2 mother through LSCS with birth 3.260kg with normal APGAR admitted on day 28 of life with complaints of seizures & irritable cry. Baby was treated for LONS (Liver abscess), planned antibiotics for 6 weeks. PICC line was secured on day 3 of admission &tip was confirmed on x ray. Post 8 days of PICC line noticed swelling over left thigh & knee joint region. On removal, only a part of PICC was removed(13cm) because the PICC was fractured when removed. Chest X-ray showed PICC fragment in course from Inferior venacave to femoral vein.

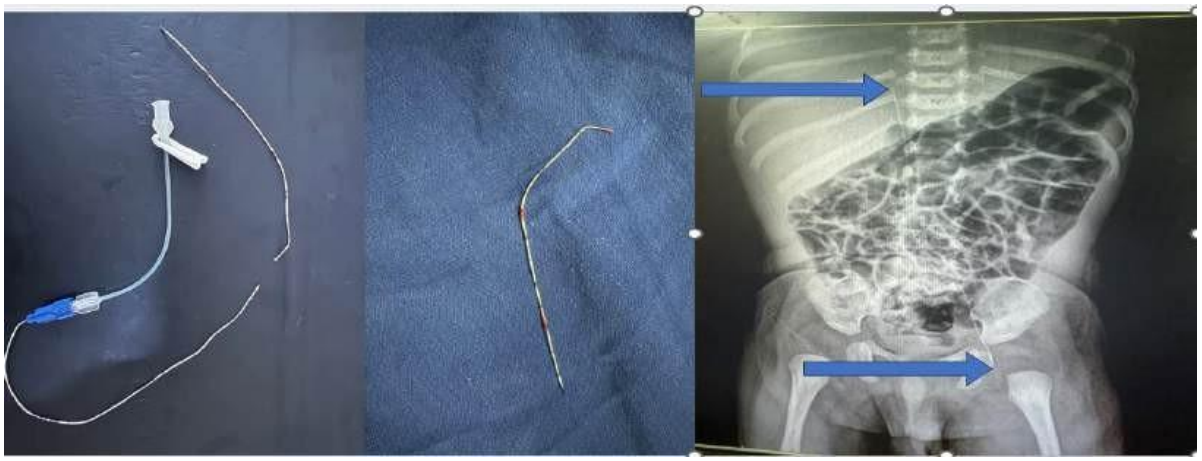
Through emergency procedure, the remainder of PICC was successfully retrieved by an interventional operation percutaneously via the right femoral vein by a cardiologist with support from anaesthesia & neonatal team. Baby clinically improved & discharged after complete course of antibiotics

PICC fracture is less common.It may lead to serious complications such as embolism, endocarditis and even death. Thus nurses, doctors, patients & family members should pay enough attention to daily maintenance of PICC & have deep understanding of the reasons associated with PICC fracture as well as how to prevent it. Interventional operation is minimally invasive, which is a good choice for the removal of intravascular foreign bodies, leading to fewer complications and good prognosis.

Conclusion:

Nurses and doctors should be educated and made aware of complications of PICC fracture & associated problems.

Keywords: PICC, fracture



P6 A CASE OF TRANSIENT ABNORMAL MYELOPOIESIS IN A NEW BORN WITH DOWNS SYNDROME

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INTRODUCTION:

Children with downs syndrome (trisomy 21) have a unique predisposition to develop ALL and myeloid leukaemia of down's syndrome(ML- DS). It mostly develops before the age of 5 years and acute leukaemia is preceded by a clonal neonatal preleukemic syndrome called Transient Abnormal Myelopoiesis (TAM) .TAM affect 4-10% of neonates with downs syndrome.Mostly it resolves spontaneously over 3month.

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A term newborn female baby was referred to our hospital on day1 of life with complaints of gastric bleeding. On examination baby was stable and had external features of downs syndrome. cbc showed persistently low platelet count. Peripheral smear study showed severe thrombocytopenia with atypical cells of 18%. Other investigations were normal,meanwhile karyotyping report confirmed trisomy 21. Bone marrow study and flowcytometry showed 14% blastoid cells. Child was treated with regular platelet transfusion and other supportive care continued. Oncologist opinion obtained and supportive care continued. Child was discharged and on followup,Child was asymptomatic and blood investigations were within normal limits.

CONCLUSION:

Around 10- 15% of neonates with down's syndrome have a diagnosis of TAM with blasts more than 10%. The mortality rate of TAM may be upto 20%.Our case had a complete remission. But the long-term outcome is yet to be studied. The child is still under follow up and the propensity of TAM to evolve into acute leukaemia is being followed up.

P7

The Butterfly Effect: Living with Epidermolysis Bullosa Dystrophica

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Introduction

Epidermolysis Bullosa Dystrophica is a rare blistering disease diagnosed by clinical symptomatology, histopathology, electromicroscopy and genetic studies. We present a neonatal case and discuss management challenges.

Case details

A 2.65 kg-girl, term LSCS delivery presented with multiple large bullous lesions over her buttocks, calves and trunk. The lesions were well-demarcated with normal surrounding skin, containing clear fluid with erythematous base.

Diagnosis

- Skin biopsy: cell-poor subepidermal blister formation
- Immunostaining: focal deficiency of type VII Collagen
- Whole exome sequencing: COL7A1 mutation (AR), confirming EBD

Management

Multidisciplinary care from neonatologists, pediatricians, dermatologists

Skin care, dressing, and family education.

Followup

2-months - 1 blister/3 days. Growth and development were satisfactory.

3-months - more blisters daily as the girl became more active. Occupational therapy adviced to design barrier splintage.

4-months -1 bulla/week. In order to reduce rubbing and scratching treated with aqueous cream, 10% urea cream, 1% hydrocortisone acetate cream, and occasionally oral chlorpheniramine maleate.

8- months - One new bulla on the face or earlobe/ month.

11 months - growth and development satisfactory

The family continued to receive multidisciplinary support to ensure optimal outcome.

Conclusion

- Early diagnosis and multidisciplinary care improve outcomes
- Collaborative management reduces complications
- Psychosocial support and rehabilitation therapy are essential for optimal quality of life.
- Gene therapy offers future hope

P8

THE GLYCINE ENIGMA - CRACKING NKH'S CODE

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Background:

Nonketotic hyperglycinemia (NKH) is the inborn error of metabolism defined by deficient activity of the glycine cleavage enzyme system (GCS), which results in accumulation of large quantities of glycine in all body tissues.Majority of children with NKH have onset in the neonatal period manifest as progressive lethargy, profound coma, marked hypotonia.

Case characteristics:

Late preterm/ AGA/ female baby, cried soon after birth, developed lethargy at 8th hour of life, hypoglycemia+ , treated, baby was intubated in view of poor respiratory efforts. Baby evaluated for encephalopathy.Baby also developed new onset seizures on day 8 of life.Initial investigations were normal, CSF analysis and septic workup was negative. GALAK screening for inborn errors of metabolism was normal.EEG revealed abnormal epileptic activity with burst suppression pattern.TMS revealed elevated glycine levels.Glycine encephalopathy was suspected.CSF to plasma glycine ratio was elevated. MR spectroscopy revealed glycine peak.

Outcome:

Baby started on sodium benzoate and dextromethorphan.Baby's sensorium improved, weaned off from invasive ventilation slowly to room air.Baby improved and discharged.

Conclusion:

Nonketotic hyperglycinemia is a rare metabolic disorder affecting glycine catabolism.Identifying the disease earlier, helps in starting the treatment earlier, resulting in better neurodevelopmental outcome.

P9

CHAOTIC CROSS OVER - UNWINDING THE ENIGMA OF CONGENITAL MYASTHENIC SYNDROME

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Introduction:

Congenital myasthenic syndrome (CMS) is an inherited neuromuscular disorder caused by defects at the neuromuscular junction, with frequency of 1 in 200,000.These heterogeneous disorders are caused by genetic defects in presynaptic, synaptic basal lamina, and postsynaptic components of the neuromuscular junction.

Case characteristics:

Term/ Male baby was born with 2.0kg, to non consanguineous parents, with history of PIH in mother & uneventful antenatal period. Baby cried soon after birth, with an APGAR of 8/10, 9/10. Baby went in for sudden apnea on day 2 , intubated , investigated for apnea.On examination baby had generalized hypotonia.Baseline investigation were normal, including septic workup.Repeated attempts of extubation tried, baby didnot tolerate and went for recurrent apnea, suspected of central apnea.Baby was given a trial of caffeine,but no promising results.

Outcome:

Baby succumbed to sepsis& multiorgan dysfunction, at day 66 of life.Genetic report revealed Congenital myasthenia syndrome -type 4A slow channel.

Investigations:

CBC, RFT, LFT,S.electrolytes, random blood sugar,S.Calcium, S.CPK,TFT,ABG, Sepsis screen,TMS, Ultrasound cranium,Chest xray, Echo were normal at admission.Positive septic screen, ↑renal, liver parameters at 2nd month of life.

Genetic report : **CHRNE EXON 10 Congenital myasthenia syndrome type 4 A** slow channel AD Heterozygous Uncertain significance

Conclusion:

Congenital myasthenic syndromes are group of disorders in newborn, due to genetic defects in neuromuscular junction.A definitive genetic diagnosis is useful for treatment, supplying prognosis & genetic counseling.

P10

"TROUBLED BREATH, HIDDEN MASS"- UNMASKING CARDIAC RHABDOMYOMA, A CLUE TO TUBEROUS SCLEROSIS

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CO-AUTHOR: Prof. Dr. Luke Ravi Chelliah MD.,

PLACE OF STUDY: Institute of child health, Egmore, Chennai.

BACKGROUND:

Tuberous sclerosis complex is an autosomal dominant multisystem disorder, caused by mutation in TSC1 and TSC2 genes. Its prevalence is 1 in 6000 to 10000 newborns. Rhabdomyomas are most common cardiac tumour often associated with Tuberous sclerosis complex.

CASE PRESENTATION:

A Male baby, third born to P3L3A1 hypothyroid mother, born via LSCS with normal perinatal transition had respiratory distress referred after intubation for impending respiratory failure. Later the baby developed seizures & supraventricular tachycardia. ECHO showed multiple rhabdomyoma attached to the ventricular wall. CSF analysis shows meningitis. Baby was treated with IV antibiotics, amiodarone infusion followed by oral propranolol. 3 weeks post admission, baby developed recurrent seizures, USG cranium & CT brain suggestive of hydrocephalus. Extra ventricular drainage followed by Left VP shunt was done. Genetic analysis showed TSC1 gene positive. Following a collaborative approach, the baby revived and remains under close follow-up.

OUTCOME:

Baby discharged with adequate weight gain,oral feeds, oral propranolol, amiodarone & oral antiepileptics. 45th and 75th day vaccination given. Parenteral counselling & advice on screening of other family members given.

DISCUSSION:

Tuberous sclerosis complex is an extremely heterogeneous disease with a wide clinical spectrum. Rhabdomyomas are tumours with favourable prognosis because they often regress spontaneously, but sometimes it may cause obstruction & arrhythmias. TSC with neurological involvement have an unfavourable prognosis. Proper diagnosis & timely management prevent catastrophic cardiovascular collapse.

P11

Resistant bugs creating chaos : A case of carbapenemase producing klebsiella sepsis

Dr. Aswin Raveendran, Dr jenisha Jain, Dr Naman Jain

Choithram hospital and Research Centre

Introduction

During the last decades, there has been a worrying rise in Gram-negative intestinal bacteria producing carbapenemases. The emergence and spread of carbapenem-resistant *Klebsiella pneumoniae* is a serious medical problem worldwide. Some of the most frequently encountered carbapenemases are those of the OXA-48 group . These enzymes hydrolyse carbapenems only at a low level and show weak activity against cephalosporins, but high-level resistance to carbapenems can be achieved when combined with permeability etc. Carbapenemases of the OXA-48 group, hence, constitute a threat to our ability to treat bacterial infections.

Case Report

28 year old primi mother with history of high grade fever for 4 days at gestational age 37 weeks 1 day delivered a female baby of weight 2430 grams. septic profile of baby send on 48 hours of life was negative and got discharged. At day of life 4 baby had complaints of poor feeding and icterus and got readmitted for the same and antibiotics were started. On day life 5 baby developed difficulty in breathing with desaturation, hence kept on HFNC support. and antibiotics were upgraded to inj piperacillin tazobactum with Inj polymixin B. But symptoms doesn't improved instead worsened with increased requirement of respiratory support. Respiratory Multiplex was send which came positive for klebsiella pneumonia OXA 48 gene was also detected in klebsiella. So antibiotics were upgraded to inj ceftazidim avibactum and inj aztreonam. Baby responded well to this and symptoms improved and slowly weaned off from respiratory supports and discharged on DOL 18.

Discussion

Outbreaks of extended-spectrum β-lactamase (ESBL)-producing Klebsiella pneumoniae have been extensively reported worldwide and carbapenems often remain the treatment of last resort. However, carbapenem resistance in *K. pneumoniae* has occasionally been reported and may be due to plasmid-mediated AmpC cephalosporinases associated with porin modifications.

Conclusion

AMR and MDR bugs are getting more and more prevalent in the last decade.Molecular detection techniques such as PCR, although apparently costly, far outweigh the other protocols in use, thereby helping healthcare professionals and policy makers to combat the unabated challenge created by the problems of AMR and MDR.

P12

Innovation poster

Title: Development and validation of a low-cost intercostal drainage (ICD) training model using 3D printing technology.

Authors:

1. **Dr Sreedhara M S. Consultant neonatologist, Rainbow Children's hospital, Hebbal, Bengaluru.**
2. **Dr Ashoka C. Professor, Dept of Neonatology. SRM MCH and RC, Kattankulathur, Chengalpattu, Chennai**
3. **Dr Usha Devi. Assistant Professor, dept of Neonatology, JIPMER – Pondicherry.**
4. **Dr Thinesh Kumar J. Consultant neonatologist, Rainbow Children's hospital, Chennai.**
5. **Dr Prashanth YN. Consultant neonatologist, Bangalore Baptist Hospital.**

Introduction: Many systems are used to train doctors for ICD insertion. This innovative approach aims to enhance training effectiveness and accessibility in low-resource settings.

Aim:

To develop and validate a low-cost intercostal drainage (ICD) training model using 3D printing technology.

Objectives:

1. **Development of the model using 3 D printing technology**
2. **Validation**

Materials and Methods:

1. Designing the Neonatal Chest Structure for 3D Printing:

DICOM data from a neonatal chest CT scan provided anatomical details for accurate modeling. The data was converted into a 3D printable STL file using "Democratizing 3D" software, which automated segmentation of the anatomical structures. The STL file was imported into Tinkercad, an online CAD tool, where modifications were made to improve usability for training purposes.

2. Iterative Modeling Using a 3D Printer:

The initial model was printed using an FDM (Fusion Deposition Modeling) 3D printer, and a silicone sheet was added to simulate soft chest wall tissues. Pilot testing revealed areas for improvement, such as enhancing anatomical realism, adjusting dimensions, and strengthening the ribs. Modifications were made to the model design and printer settings, including reinforcing structures, changing infill density, trying different soft sheets to give the best "give away feel" and adding anatomical landmarks.

3. Validation:

Doctors were trained on neonatal ICD insertion using the model in workshops. Feedback was collected via Google Sheets based on system utility scoring. There were 76 participants (70 postgraduates, 3 neonatal fellows, and 3 pediatricians.) The mean SUS score was 78.09 with SD of 12.17. Amongst the participants, 50 % rated the model as excellent and 28.9 % as good, remaining as Ok.

This low-cost model was effective for neonatal ICD training.

P13

Title: Development and bench testing of a novel neonatal Bubble Continuous Positive Airway Pressure Device with Bubble Non Invasive Positive Pressure Ventilation mode.

Authors:

1. ***Dr Sreedhara M S. Consultant neonatologist, Rainbow Children's hospital, Hebbal, Bengaluru.***
2. ***Dr Ashoka C. Professor, Dept of Neonatology. SRM MCH and RC, Kattankulathur, Chengalpattu, Chennai***
3. ***Dr Usha Devi. Assistant Professor, dept of Neonatology, JIPMER – Pondicherry.***

Introduction: Traditional bubble CPAP devices, while effective, often fail, leading to the need for invasive ventilation. They also depend on compressed air, making them less suitable for low-resource settings, and the additional pulse oximeter increases costs. This highlights the need for a more accessible, portable, and efficient device to improve neonatal care.

Aim: Develop and bench-test a novel bubble CPAP device.

Objectives:

1. Develop the device.
2. Bench test its functionalities.

Materials and methods: A multidisciplinary team of doctors, engineers, and safety experts developed the device in two prototype stages. The first prototype focused on basic functionalities, ensuring proper pressure delivery, ergonomics, and monitoring systems. The second prototype was refined based on Indian Standards for neonatal ventilators, derived from the International Electrotechnical Commission Standards (IEC).

The device includes a **patented Bubble NIPPV mode** (Indian Patent 460729). Some studies suggest that bubble CPAP's oscillatory pressure improves gas exchange and reduces CPAP failure compared to the constant pressure from ventilator-driven CPAP, leading to better respiratory outcomes in neonates. We propose that NIPPV, delivered using bubbling under water with oscillatory pressures, could perform better, though clinical trials are necessary to validate this.

Outcomes and conclusion:

A certified gas analyzer was used to compare the delivered parameters against set parameters. The device demonstrated reliable pressure delivery in both CPAP and Bubble NIPPV modes. Collaboration across fields ensured clinical accuracy, technical reliability, and safety.

The innovative bubble CPAP device showed promising results in bench studies, and clinical trials are needed for further validation.

NEOCON 2024 POSTERS

P1

A RARE CASE REPORT OF A NEONATE WITH O DONNELL -LURIA - RODAN SYNDROME WITH CONGENITAL MYOPATHY -1A WITH SUSCEPTIBILITY MALIGNANT HYPERTHERMIA.

INTRODUCTION

ODonnell-Luria-Rodan syndrome is caused by heterozygous mutations in the KMT2E gene. The neurodevelopmental disorder is characterized by global developmental delay, speech delay, variably delayed intellectual development, and subtle dysmorphic features. Some patients may have autism, seizures, hypotonia, and/or feeding difficulties.

Congenital myopathy-1A with susceptibility to malignant hyperthermia (MHS) is caused by heterozygous mutations in the RYR1 gene. This is a skeletal muscle disorder is characterized by muscle weakness primarily affecting the proximal muscles of the lower limbs beginning in infancy or early childhood, although later onset of symptoms has been reported.

The disorder is static or slowly progressive; affected individuals typically show delayed motor development and usually achieve independent walking, although many have difficulty running or climbing stairs. Additional features often include mild facial weakness, joint laxity, shoulder girdle weakness, and skeletal manifestations, such as dislocation of the hips, foot deformities, scoliosis, and Achilles tendon contractures.

CASE REPORT

A single late preterm female baby born to a 28 year old primigravida mother. With antenatal scan showing polyhydrominos with ventriculomegaly. Baby was delivered via LSCS with birth weight of 2.1kg, baby did not cry immediately at birth and baby was mechanically ventilated for 1 day and later was weaned off to CPAP support. But baby had extubation failure and required mechanical ventilation continued for 7 days later baby was weaned off to NIV support and later was weaned off to HFNC. Baby had convulsions on day 2 of life required 2 anti epileptic drugs. On examination baby had Syndromic features with arthrgryposis of distal joints with hypotonia of limbs. Baby had poor reflexes and also baby had poor suck and swallow. Hence baby had severe feed intolerance required feeding gastrostomy for the same. Initial investigation were normal. TMS and urine GCMS was normal. MRI brain was normal.

Genetic report sent which had 2 genetic mutations o donnell -luria - rodan syndrome with congenital myopathy -1a with susceptibility malignant hyperthermia.

DISCUSSION

There are no case reports of neonatal presentation of O DONNELL -LURIA - RODAN SYNDROME. Only 30 cases have been reported till date. Mostly presenting age being 20 months where they present with hypotonia, seizures , delayed developmental milestones.

It is a very rare entity which we reported in our case report where the neonate has 2 significant autosomal dominant mutations each of it had a varied presentation. Along with the O DONNELL -LURIA - RODAN SYNDROME baby had congenital myopathy -1a with susceptibility malignant hyperthermia.

Congenital myopathy-1A with susceptibility to malignant hyperthermia is an autosomal dominant disorder of skeletal muscle characterized by muscle weakness primarily affecting the proximal muscles of the lower limbs beginning in infancy or early childhood, although later onset of symptoms has been reported. There is significant phenotypic variability, even within families, and the wide clinical diversity most likely depends on the severity of the RYR1 mutation. The disorder is static or slowly progressive; affected individuals typically show delayed motor development and usually achieve independent walking, although many have difficulty running or climbing stairs. Additional features often include mild facial weakness, joint laxity, shoulder girdle weakness, and skeletal manifestations, such as dislocation of the hips, foot deformities, scoliosis, and Achilles tendon contractures. Some patients present with orthopedic deformities. Serum creatine kinase is usually not elevated. Respiratory involvement is rare and there is no central nervous system or cardiac involvement. Patients with dominant mutations in the RYR1 gene are at risk for malignant hyperthermia and both disorders may segregate in the same family. Historically, patients with congenital myopathy due to RYR1 mutations were diagnosed based on the finding of pathologic central cores (central core disease; CCD) on muscle biopsy, which represent areas that lack oxidative enzymes and mitochondrial activity in type 1 muscle fibers.

CONCLUSION

Both the conditions mentioned above have no case reports of neonatal presentation. Usual presentation being in the infancy or early childhood. But this is the first of its kind case report which has both the genetic mutation presenting at neonatal age group mostly as the muscular dystrophy.

P2

Title: Skin to skin contact after birth in stable neonates: A quality improvement study

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INTRODUCTION:

Skin-to-skin contact (STS) with the mother immediately after birth has several benefits, namely enhanced cardiorespiratory stability, thermoregulation in the neonate, and breastfeeding success. We used a point of care quality improvement (POCQI) to implement STS after birth in stable neonates over a period of 12 weeks through a series of Plan-Do-Study-Act (PDSA) cycles.

METHODS:

All neonates ≥35 weeks of gestation who did not require resuscitation, had no respiratory distress, and were born via vaginal delivery were eligible. The fishbone analysis identified the causes of gaps in the quality. The key quantitative outcome was the percentage of eligible vaginal deliveries in which skin-to-skin contact was given for 60 minutes. After recording the baseline data on STS contact, 3 PDSA cycles were sequentially completed over 12 weeks. The results of each cycle informed the change strategy in the next cycle.

RESULTS:

Seventy deliveries were part of this QI study from June to August, 2024. Fishbone analysis revealed a knowledge-practice gap amongst nurses and mothers, routine shifting of babies to radiant warmer as process concerns. STS significantly improved from a baseline of 0% to 89% over 12 weeks. Sensitization, reorganizing tasks- SOP, making STS part of the pre-birth checklist, and allowing the mother to choose a birth companion helped to implement over 12 weeks.

CONCLUSIONS:

Using a POCQI methodology, STS care immediately after birth for 60 minutes could be implemented. STS after cesarean delivery needs to be implemented further.

P3

A UNIQUE CLINICAL PRESENTATIONS OF MEGDEL SYNDROME IN NEONATES – A CASE SERIES

INTRODUCTION:-

MEGDEL syndrome is an autosomal recessive disorder, clinically characterized by 3-methylglutaconic aciduria, psychomotor delay, muscle hypotonia, sensorineural deafness, and Leigh-like lesions on brain magnetic resonance imaging. MEGDEL syndrome is due to mutations in the serine active site-containing protein 1 (SERAC1) gene. The SERAC1 protein is localized at the interface between the mitochondria and the endoplasmic reticulum in the mitochondrion-associated membrane fraction, which is essential for phospholipids exchange. SERAC1 was identified as a key player in phosphatidylglycerol remodeling, which is essential for both mitochondrial function and intracellular cholesterol trafficking.

CASE 1

Single term female baby with gestational age of 38 weeks and birth weight of 2.45kg delivered a 3rd degree consanguineous parents delivered via LSCS to a G3P3L0D2 mother with no significant antenatal co morbidities. baby was referred to our institute in view of neonatal convulsion on day 2 of life with significant siblings death due to convulsions. Baby cried immediately after birth, but baby developed respiratory distress and required CPAP support. Baby had 2 episodes of generalized tonic clonic seizures lasting for 1-2mins on day of life. baby was in moderate encephalopathy and hence initial investigation sent showed severe refractory metabolic acidosis with hyperammonemia and lactic acidosis with deranged liver function test. MRI brain showed mild periventricular hyperintensities With suspected fatty acid oxidation defect and mitochondrial encephalopathy further workup sent. Tandeem mass spectroscopy and 6 pannel were normal. Mitochondrial cocktail therapy was started and seizures were controlled by Phenobarbitone. Measures were taken to lower the ammonia levels. Oral bicarbonate was added suspected with inborn error of metabolism and due to persistent metabolic acidosis secondary to bicarbonate loss.

Whole exome sequence sent which showed mutation of SERAC1 gene causing 3- methylglutaconic aciduria with deafness, encephalopathy and leighs like syndrome which was a homozygous with autosomal recessive inheritance. Further workup showed baby had mild hearing loss in left ear Baby was started on Maple syrup urine diet which was free from leucine, isoleucine and valine. Hence additional supplementation of valine and isoleucine was done. With change in diet the

encephalopathy in the baby improved and also acidosis and hyperammonia was corrected with measures to lower ammonia. Also the liver enzymes were normalized

Baby was discharged with the special formula feeds and supplements were continued.

CASE 2

A 32 days old female, late preterm with gestational age of 35 + 1 weeks with birth weight of 1.5kg, born to a non consanguineous couple with G2P2D1 mother. With previous sibling death on day 6 of life due convulsions and lethargy. Mother had no comorbidities during pregnancy. A 35 week scan showed severe IUGR with oligohydrominos hence baby was delivered via LSCS, baby cried immediately after birth but baby had respiratory distress and hence admitted to NICU for further management of preterm and low birth weight. Baby stayed in nicu for 8 days and received oxygen support via nasal prongs for 2 days and antibiotics were given in view of sepsis screen positive, feeds were established and was discharged to mother side.

Baby was mother side from day 8 to day 20 where baby was on mother feeds and was hemodynamically stable. On day 20 of life mother noticed baby had generalized tonic clonic seizures multiple episodes with reduced activity and and reduced feeding due to difficulty in swallowing. And hence baby was admitted to NICU. Intial metabolic workup was normal with EEG done showed burst attenuation pattern. Baby was referred to our institute on day 32 of life with complains of multiple seizures with lethargy with hypotonia. On clinical evaluation baby had tongue fasciculation with generalized hypotonia with exaggerated deep tendon reflexes. Initial workup for suspected IEM done showed tandem mass spectroscopy being normal also urine GCMS was normal. Blood gas was normal with no evidence of hyperammoniemia or lactic acidosis. CPK levels done with was within normal limits.

By day 37 of life baby had multiple episodes of refractory apenic seizures requiring mechanical ventilation with midazolam infusion and also vigabatrin was added.

Whole exome sequence sent which showed mutation at SERAC1 gene with heterozygosity with autosomal recessive inheritance suggestive of 3- methylglutaconic aciduria with deafness with encephalopathy and Leigh like syndrome, MEGDEL syndrome.

Baby is was on mechanical ventilation due to severe encephalopathy and refractory seizures baby was on multiple anticonvulsants. But parents did not wanted to continue the further management hence too the baby againt medical advice. Baby succumbed by 2 hours of weaning the ventilatory support.

DISCUSSION

In our case series we present 2 different early neonatal clinical presentation of MEGDEL syndrome with different zygosities. Initial case presented with clinical picture of metabolic acidemic crisis with hepatopathy and encephalopathy, which was a homozygous inheritance. baby improved with change in diet and the metabolic crisis and encephalopathy improved. MEGDHEL syndrome is best described as a progressive deafness–dystonia syndrome with frequent liver involvement. Despite the severity of neurological impairment, most affected individuals survive into adulthood. Our 2nd case showed the severe neurological form of MEGDEL syndrome with severe encephalopathy but without the hyperammonemia or hepatopathy.

MEGDEL syndrome is due to usually compound heterozygous or homozygous mutations in the *SERAC1* gene. With increasing recognition and diagnosis of the condition, it becomes increasingly evident that the phenotypic spectrum is broader than so far anticipated and not only includes cerebral abnormalities but also otologic, ophthalmologic, cardiac, endocrine, muscle, and nerve

CONCLUSION :

The clinical presentation and organ involvement can vary from each individuals with the same mutations of SERAC1. Multiple case reports have different and varied clinical phenotypical presentation. MEGDEL. Imaging studies of brain may not be conclusive of the MEGDEL syndrome since in our case series showed no significant MRI features. Whole exome sequencing being the investigation of choice for identifying the mutation of the SERAC1 gene with the zygosities.

In all these cases, urinary organic acid analysis and appropriate genetic testing for SERAC1variants should be performed. MEGDHEL syndrome is one of the signature disorders of a new group of disorders with a defect in the biosynthesis of phospholipid.

Currently, no effective treatment for MEGDHEL syndrome is available. Disease management options are directed toward proper supportive care

P4

"NOT SO SIMPLE" – VESICLE:

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ABSTRACT:

INTRODUCTION:

The incidence of HSV infections in neonates is 1 in 3000 to 1 in 20,000 live births (1). Infants usually present by 10-12 days of life with signs of sepsis or shock (2) We present a rare scenario in which a neonate had vesicular lesions and keratitis at birth.

AIMS AND OBJECTIVES:

1. To understand that neonatal herpes can present at birth, rarely.
2. To highlight the early involvement of multidisciplinary team in enhancing outcomes and reducing recurrences in neonatal herpes.
3. To outline the principles of management of ocular involvement in neonatal herpes.

MATERIALS AND METHODS:

Interventional case report.

RESULTS:

A 29 weeks preterm neonate, 1.2 kg at birth, was delivered vaginally in view of PPROM. The neonate had clustered vesicular lesions surrounded by erythema over the chest and abdomen at birth. Baby was mechanically ventilated in view of perinatal depression, and started on empirical IV antibiotics and Inj. Acyclovir. Contact precautions were followed and isolation was done.

Ophthalmic examination showed erythematous eyelids and fluorescein staining showed keratoconjunctivitis with epithelial defect. Tzanck smear and skin biopsy showed multinucleated giant cells. Blood HSV PCR was positive for HSV – 1. CSF analysis was normal and CSF HSV PCR was negative. Baby was treated with Apidine eye drops initially, and Refresh tears eye drops later. Once the epithelial defect healed, Prednisolone eye drops and Atropine ointment were started. Inj. Acyclovir was given for 21 days. Skin lesions healed and the baby was discharged on day 27 of life on Paladai feeds and Oral Acyclovir prophylaxis for 6 months. At review, baby is thriving well and is on neurodevelopmental follow up. The cornea has cleared completely and there is no ROP.

CONCLUSION:

1. Herpes can present at birth. A high index of clinical suspicion is essential to diagnose herpes in neonates presenting with sepsis.
2. Early initiation of Acyclovir reduces mortality and improves outcomes.
3. Acyclovir prophylaxis reduces recurrence rates in neonatal herpes.
4. Early multidisciplinary team involvement reduces morbidity and enhances outcomes.

ABBREVIATIONS:

HSV	Herpes Simplex Virus
PPROM	Preterm Premature Rupture Of Membranes
IV	Intravenous
PCR	Polymerase Chain Reaction
CSF	Cerebrospinal Fluid
ROP	Retinopathy Of Prematurity

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P5

Thoracopagus conjoined twin- Atoptic findings

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Introduction: Conjoined twins are a rare phenomenon and thoracopagus being the most common type. There is a high incidence of stillbirth and neonatal death, with only a small number surviving to undergo surgical separation.

Findings:

INTERNAL ORGANS:

ORGANS	FINDINGS
BRAINS, THYMUS, SPLEEN, LUNGS	Grossly unremarkable.
HEART	Common heart(16gms), single pericardial cavity with 4 chambers(LA,L,RA and RV), SVC and IVC and single aorta with VSD.
DIAPHRAGM	Fused anteriorly.
LIVER& GIT	Common liver and single gall bladder(156 gms).T2-short small gut.
KIDNEYS, URINARY BLADDER AND ADRENALS	Four kidneys, four ureters and two urinary bladders present . T1 – multicystic appearance thinned walled UB. Altogether weighing 36 gm.
INTERNAL GENITALIA	T2- Undescended testis

HISTOPATHOLOGY FINDINGS:

Section:

- umbilical cord: single umbilical artery and vein.
- kidneys: T1 show multiple small cortical cysts and of T2 are unremarkable.
- liver: evidence of extramedullary hematopoiesis.
- testes : immature infantile testicular tissue.
- brain, lungs, guts, adrenals and thymus of both the fetus: unremarkable

Figures: (a)Thoracopagus twin-gross photograph,(b)Infantogram showing fusion of lower thorax with whole abdominal wall,(c)Gross photograph showing common heart and liver (d)Thoracic and abdominal cavities,(e)Gross photograph of common liver,(f)Intestines-one showing small gut,(g)&(i)Common heart with renal anomalies

Discussion:

Thoracopagus twins have a poor prognosis due to the high frequency of cardiac anomalies and complex fusion of the liver and bile ducts. Most share hearts with significant abnormalities, reducing the chances of successful separation surgery. Prenatal evaluation of shared organs is crucial.

Conclusion: A conjoined twin presents with distinct challenges for management, regardless of the patient's care preferences.

Keywords: Conjoined twins, thoracopagus Word counts:250

P6

TITLE: "THE FIGHT FOR EVERY BREATH"

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BACKGROUND: The most common cause of respiratory distress in preterm is Respiratory distress syndrome.They respond to surfactant therapy and CPAP support.Suspicion of genetic disorders of the surfactant needs to be kept in mind especially in term infants with clinical presentation and radiographic findings identical to RDS with no response to surfactant therapy.

CASE DETAILS: A girl baby second born of second degree consanguineous marriage was born at 34 weeks of gestation by C-section (Ind:oligohydraminous).Baby cried at birth and was 2.6 kg. In view of respiratory distress at birth baby was put on CPAP. Initial Xray was suggestive of RDS. Baby was treated with Iv antibiotics and surfactant. Sepsis screen was negative. ECHO showed a small PDA with no pulmonary hypertension. CT Chest was suggestive of interstitial lung disease. In view of persistent oxygen requirements at 45 days of life possibility of congenital surfactant deficiency was considered. WES revealed a Homozygous ABCA3 mutation-Congenital surfactant deficiency. Baby was treated with anti inflammatory drugs steroids, azithromycin and hydroxychroloquine. She was weaned off from mechanical ventilation to nasal prongs and discharged on oxygen concentrator at 60 days of life and advised follow up.

DISCUSSION: Congenital surfactant deficiency has a incidence of 1 in 1 million live births worldwide. ABCA3 is the most common mutation seen. It can present as severe lethal form in newborn or a chronic form as interstitial lung disease. No specific treatment is available. Therapeutic approaches used for ILD such as use of corticosteroids, macrolides and quinolones can be considered. Lung transplant is reserved for refractory respiratory failure.

P7

Relevance of Routine Cord blood investigations in Rh negative pregnancies: A pilot study

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ABSTRACT

Background: Rh isoimmunisation is still an important cause of HDN (hemolytic disease of the newborn) in India. However, in the present-day era of widespread use of anti-D immunoglobulin and small family sizes, there is a need to evaluate if the practice of routine cord blood investigations in Rh-negative pregnancies should continue, hence this pilot study was conducted.

Methods: It was an ambispective descriptive observational study of all babies born to Rh negative pregnancies of the study hospitals during the study period. Cord blood of all Rh-negative pregnancies was tested for Rh and ABO typing, direct Coomb's test (DCT; DAT), haemoglobin and serum bilirubin. Outcome of newborns were assessed as per their clinical course during hospital stay and requirements of treatment modalities, if any.

Results: During the study period, out of total 3,471 mothers, 150 (4.32%) were Rh negative, of whom 16 (10.66%) tested ICT (Indirect Coombs Test) positive. A total 153 babies were born to 150 Rh negative Mothers (03 being twin Deliveries) amongst whom, 123 (80.39%) were "At-Risk" babies, ie. Rh Positive babies born to Rh Negative Mothers. There was strong correlation of Cord Blood DCT (Direct Coombs Test) with antenatal ICT (Indirect Coombs Test) and all babies in the Risk Group who developed jaundice within 24hrs and/or required exchange transfusion and/or IVIg were born to ICT positive mothers. However, there was no statistically significant difference between the "At-risk" babies and the Control group (Rh-negative neonates born to Rh-negative mothers) regarding Cord blood DCT, Hemoglobin and Bilirubin; and in none of the patients did cord blood investigations predict the requirement for exchange transfusion. Subsequent management decisions were based on clinical appearance of jaundice and not cord-blood reports.

Conclusion: While Cord blood Blood-grouping (ABO-Rh) is still important to determine baby's blood group and Anti-D requirement for the mother, it appears from this pilot study that other cord blood investigations (Cord blood DCT, Hemoglobin and Bilirubin) are not relevant in Rh-negative pregnancies with no antenatal evidence of isoimmunisation. Rather, close clinical monitoring for hyperbilirubinemia was important to determine management. However, it is recommended to continue the practice of cord blood investigations in pregnancies with antenatal evidence of isoimmunisation or in pregnancies where antenatal investigations were not done.

P8

TITLE: "THE MISSING LINK - SPINAL SURPRISE"

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BACKGROUND: Overt diabetes mellitus is a known risk factor for development of congenital malformations. The importance of preconception glycemic control ,Prenatal imaging studies , physical examination of the infant of diabetic mother and diagnostic testing is emphasized for reliable recognition and diagnosis.

CASE DETAILS: A girl baby was born at 36 weeks of gestation by C-section to a 38 year old mother with an obstetric score of P4L2A2 and history of overt diabetes mellitus on 56 U insulin and metformin , not on treatment before pregnancy and hypertensive on labetalol. Baby cried at birth and was 3.1 kg .Initial examination revealed diabetic fetopathy , shortening of lower extremities and bilateral varus club foot.Radiological evaluations confirmed complete agenesis of the sacrum on X-ray while MRI spine showed truncated spinal cord terminating at D12 level characteristic of Group 1 caudal regression syndrome.Additional imaging revealed situs ambiguous with midline liver, polysplenia and an azygos vein continuation of the inferior vena cava.MRI brain and echocardiogram were normal . Following multidisciplinary consultation , the baby thrived and remains under close follow up .

DISCUSSION: Caudal regression syndrome is a rare congenital malformation seen in 0.10-0.25:10,000 of normal pregnancies. The key element of prenatal ultrasonogram is the detailed evaluation of spine and lowerlimbs which allows for the diagnosis of caudal regression syndrome and associated anamolies .Treatment is challenging and demands multidisciplinary approach.

P9

TITLE : "A LIFE ETCHED IN BONE"

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BACKGROUND: Seizures are more common in the neonatal period than any other time of life.It may be due to various reasons like prematurity,hypoxia,metabolic disturbances and infection. Refractory seizures with persistent metabolic disturbances should raise the suspicion of an underlying rare pathology.

CASE DETAILS : We report a 30 days male child,Term (39+2),weighing 3.5kg,delivered through C-section to a 2^{o} consanguineous parents with normal perinatal transition.Baby developed hypocalcemic seizures on day 10 of life and treated for the same.On day 15,baby had refractory seizures and was referred to ICH.On examination,baby had pallor,hepatosplenomegaly,growth failure and bulging anterior fontanelle.Ophthalmic examination revealed bilateral cataract.Skeletal survey detected sclerotic bones and right tibial fracture.Neuroimaging revealed symmetrical hyperintensity in bilateral periventricular region with dilated ventricles.Investigations showed pancytopenia,hypocalcemia, renal tubular acidosis like picture and a positive sepsis screen.Bone marrow biopsy revealed bone marrow hypocellularity.Genetic testing revealed homozygous autosomal recessive mutation in TNFRSF11A gene diagnostic of Malignant infantile Osteopetrosis (MIOP).Baby received supportive treatment.HLA typing was done with plan of hematopoietic stem cell transplantation (HSCT).Unfortunately child succumbed to the disease on day46.

DISCUSSION: Osteopetrosis includes Infantile Malignant Autosomal Recessive,Intermediate Autosomal Recessive and Autosomal Dominant type. MIOP is a rare and severe genetic disorder due to abnormal osteoclast activity with an incidence of 1:250000.MIOP diagnosis is based on typical clinical, hematological parameters and characteristic radiological changes.Here,baby had hypocalcemic seizures and pancytopenia with features of extramedullary hematopoeisis clinching the diagnosis. Early diagnosis and timely HSCT are the only curative approach for an otherwise fatal disease.

P10

TITLE: "UNRAVELING THE GENETIC PUZZLE"

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BACKGROUND: The most commonly considered diagnosis when a term newborn presents with seizure, lethargy, refusal of feeds is neonatal sepsis . Clinicians should have high index of suspicion of inborn errors of metabolism when term well thriving baby presents with unexplained clinical deterioration following a period of normalcy.

CASE DETAILS: A girl baby first born of third degree consanguineous marriage at 38 weeks of gestation by normal vaginal delivery. Birth weight was 2.3kg and cried immediately after birth. On day4 of life baby had refusal of feeds, lethargy, seizures, respiratory failure and treated on mechanical ventilation . Initial diagnosis of early onset sepsis was considered. Investigations revealed hypoglycaemia, hyperammonemia, elevated lactate, normal pH, negative sepsis screen and urine ketone was positive. Inborn error of metabolism was considered. MRI Brain revealed hyperintensity at splenium .Tandem mass spectrometry and Urine mass spectrometry were inconclusive. Treated with mitochondrial supplements and sodium benzoate. Baby clinically improved after 24hours and extubated on day8 of life. Feeds (mother milk) was gradually started and no further deterioration was there. Baby was discharged with mitochondrial supplements. Genetic testing revealed homozygous SERAC-1 mutation-3-methylglutaconic aciduria with deafness, encephalopathy and Leigh-like syndrome. Infant is 11months old now and on regular followup.

DISCUSSION: 3-methylglutaconic aciduria with deafness, encephalopathy and Leigh-like syndrome is a rare disorder with an incidence of less than 1 in 1000000.Characterized by delayed psychomotor development, infantile hypoglycaemia, lactic acidosis, myoclonus and dystonia. Treatment is supportive and infantile onset carries a poor prognosis.

P11

MECP2 SEVERE NEONATAL ENCEPHALOPATHY – A CASE REPORT

Dr Surender S, Dr Ambica , Dr Sandhya S

BACKGROUND

MECP 2 (methyl CpG binding protein 2) related severe neonatal encephalopathy is a rare condition. Less than 50 affected males have been reported in the scientific literature. Spectrum of MECP2-related disorders in males ranges from mild PPM-X syndrome, MECP2 duplication syndrome to severe newborn encephalopathy. Usually present with microcephaly, hypotonia in infancy, movement disorders, rigidity, and seizures. It has an X-linked pattern of inheritance. Females do not suffer it .

CASE REPORT

We report a term male baby born having fetal distress and meconium stained amniotic fluid. Baby had poor respiratory efforts and sensorium at birth. Requiring PPV to establish respiration. He suffered recurrent apnea and developed cyclical movements. Hypoxic ischemia encephalopathy was suspected in view of fetal distress and poor APGARS. Baby was started on respiratory support, Caffeine and Phenobarbitone. UMN and LMN signs were present.

Metabolic and infective causes of neonatal encephalopathy were ruled out. CSF analysis, TMS, Ammonia, Lactate, TSH, CPK, MRI & MRS Brain and EEG done were normal. Baby had pulmonary hypertension.

Genetic analysis revealed pathogenic variant of MECP2.

Sensorium remained poor along with drooling of secretions. Baby was weaned off respiratory support by day 20 of life. On day 27 of life baby was discharged against medical advice. By 2 months of age baby succumbed.

CONCLUSION

Complications in MECP2-related disorders in males are poorly understood so it is necessary to report and accumulate clinical evidence of such cases. We conclude that MECP2 screening should be considered in males with severe neonatal encephalopathy.

P 12

"A Cautionary Tale: A Case Report addressing Neonatal Sepsis Caused by S. typhimurium and the Urgency of Responsive Treatment Strategies."

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Sepsis in neonates can occasionally be attributed to *Salmonella typhimurium*, a cause often indistinguishable from other sepsis etiologies. Early identification and prompt empiric therapy are crucial for survival. However, the rise of extensive drug-resistant strains of *Salmonella typhi* has led to increasing antimicrobial resistance in cases of enteric fever.

We present the case of a 25-day-old neonate admitted to our Neonatal Intensive Care Unit (NICU) with signs of sepsis. Initial blood cultures confirmed enteric fever; however, the patient failed to respond to standard antimicrobial therapy based on drug sensitivity results. Following this, treatment was adjusted, and the neonate was successfully managed with intravenous imipenem. This case underscores the importance of maintaining a high index of suspicion for atypical pathogens in neonatal sepsis and highlights the challenges posed by emerging antimicrobial resistance. It serves as a reminder for clinicians to consider broader therapeutic options when faced with resistant infections in vulnerable populations.

Our findings contribute to the growing body of literature emphasizing the need for vigilance and adaptability in the treatment of neonatal sepsis, particularly in the context of evolving drug resistance.

P13

BEYOND THE LUNGS: NON-PULMONARY CAUSES OF RESPIRATORY DISTRESS

Respiratory distress is one of the most common reasons for NICU admission. We present 2 cases with non-pulmonary etiologies of tachypnea.

CASE 1: A term female infant with an uneventful antenatal period presented on day 4 of life with tachypnea and retractions, irritable cry and refusal to feed. After admission, baby was noted to have tonic posturing of upper limbs. Infant had persistent metabolic acidosis with hypoglycemia, elevated ammonia, and lactate. Seizures were controlled with antiepileptic medications. Oral L-carnitine, biotin, Coenzyme Q and multivitamins in high doses were administered. EEG was suggestive of encephalopathy. MRI brain, CSF analysis and acyl-carnitine levels were normal. Plasma amino acid analysis showed elevated glutamine and alanine levels. GCMS of urine showed elevated lactate and ketone levels suggestive of mitochondriopathy. Whole exome sequencing revealed carbonic anhydrase VA deficiency involving heterozygous mutations at exons 5 and 6.

CASE 2: A term male infant with a birth weight of 2.79 kg presented on day 4 of life with respiratory distress in the form of tachypnea. Infant was also noted to have excessive weight loss and polyuria. Infant had metabolic acidosis and hypernatremia which were corrected with bicarbonate and intravenous fluid. Serum electrolytes, blood glucose and USG KUB were done which were normal. Urine osmolality was low with urine:serum osmolality ratio less than 1. Hence, diabetes insipidus was diagnosed unresponsive to vasopressin. A diagnosis of nephrogenic diabetic insipidus was confirmed after urine osmolality increased following treatment with hydrochlorothiazide.

P14

POSTER INNOVATION -INTENSIVE CARE (IC)

SEVERE EARLY ONSET FGR-ROLE OF GENETIC TESTING

POSTER- GENETICS(GENE)

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ABSTRACT

Severe FGR is generally defined as an EFW or AC <3rd centile for gestation age/presence of doppler abnormalities .They are prone to increased risk of morbidity and mortality compared to their counterparts. Foetal genetic abnormalities are responsible for 10-12 % of cases.

A new born, 31+6 weeks, ELBW(634 gm), boy baby was born to 23 year old primi mother, non consanguineous marriage through induced NVD due to severe early onset FGR with AEDF and oligohydramnios. Mother had no antenatal risk factors .AN scan at 21 weeks ,showed all parameters-BPD,HC,AC,FL-<5th centile, with High resistance flow in umbilical artery. Repeat scan at 29 weeks-All parameters <5th centile/<3 SD , with 4-5 weeks growth lag, AEDF and CPR<1.skeletal survey was normal. Amniocentesis/cf DNA testing were not done. Baby had normal

perinatal transition, birth weight-634 gm. On admission baby was hemodynamically stable , no distress, no dysmorphism. skeletal survey-normal, All anthropometric parameters-below 1st centile. The baby was kept NPO for 24 hours, started on feeds at 24 HOL and gradually escalated feeds and attained full feeds by day 11 of life. Course was complicated by grade 2 IVH and anemia. Baby was discharged home after 90 days at 1.455kg

Whole exome sequencing was sent after a normal karyotyping, Genetic analysis revealed COMP mutation-multiple epiphyseal dysplasia type 1 -Heterozygous, autosomal dominant variation of unknown significance. Its characterized by normal length at birth and normal facies .Typically, growth rate falls below the standard growth curve by 2 years, leading to a moderately severe form of disproportionate short-limb short stature and joint pain childhood.

CONCLUSION

Ascertaining a cause for FGR is important both in antenatal period and postnatal period to guide the management, and prognosis.

In this case cause for severe early onset FGR couldn't be established, as Multiple epiphyseal dysplasia type 1, is only a non-lethal form of skeletal dysplasia with normal length at birth. Other investigations that could have helped in the diagnosis would be CVS/Amniotic fluid analysis to rule out placental genetic causes detailed histopathological examination of placenta, CMA which would increase the yield for CNV and uniparental disomy .

Gene and Transcript	Exon/Intron Number	Variant Nomenclature [Variant depth/ Total depth]	Zygosity	Classification	OMIM Phenotype	Inheritance
COMP (NM_000095.3)	Exon 5	c.456G>C p.Glu152Asp (22X/37X)	Heterozygous	Uncertain significance	Epiphyseal dysplasia, multiple, 1	Autosomal dominant

P15

A RARE CA(U)SE OF FOETAL ANAEMIA

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ABSTRACT:

INTRODUCTION:

Foetal anemia is a relatively rare but serious condition (1) The most common causes of foetal anemia are maternal alloimmunization and parvovirus B19 infection (2). Well – defined fHb nomograms define severe anaemia as greater than 70 g/L below the mean for gestation or less than 0.55 multiples of the median (3), (4). The 'Hydrops zone' on the nomogram is gestation dependent, ranging from fHb <40g/L at 18 weeks of gestation to fHb<80g/L at term (5). We present a neonate with a rare cause of foetal anemia who underwent intrauterine transfusion at 27 weeks of gestation.

AIMS AND OBJECTIVES:

1. To highlight the importance of foetal medicine consultation, which aids in planning early intervention if needed, to improve outcomes in foetal anaemia.
2. To understand the need for genetic evaluation antenatally, in specific situations.

MATERIALS AND METHODS:

Interventional case report.

RESULTS:

A consanguineously married couple, with loss of their first child in view of hydrops, presented to us for their second conception. Mother's blood group was O positive. At 24 weeks of gestation, there was development of fetal hydrops with moderate ascites, mild pericardial effusion, and

polyhydramnios. Amniocentesis was done at 25 weeks of gestation and samples were sent for Chromosomal microarray and Whole Exome Sequencing. In view of increasing MCA PSV = 75 (1.8 MoM), Intrauterine transfusion was done at 27 weeks of gestation.

Baby was delivered at 31 weeks of gestation as there was increase in polyhydramnios. Baby was depressed and edematous at birth (Birth weight – 1.45 kg). Baby was ventilated, started on inotropes, intensive phototherapy, and other supportive measures. The Hb at birth was 10.8 g/dL, for which a PRBC was transfused. Peripheral smear showed microcytic hypochromic RBCs with acanthocytes, spherocytes, polychromatic RBCs, occasional elliptocytes, target cells and fragmented RBCs. As there was increase in jaundice despite intensive phototherapy, Single Volume Exchange Transfusion was done on Day 3 of life. Subsequently, baby was extubated on Day 5 of life and discharged at 37 weeks PMA. Baby required a total of four PRBC transfusions during hospital stay. Whole Exome Sequencing showed SPTA1 gene mutation suggestive of hereditary pyropoikilocytosis.

CONCLUSION:

1. Nonimmune causes of fetal anemia are being increasingly detected.
2. Family history of hemolytic anemia and sibling history of hydrops is an important clue towards early identification and successful management of rare causes of fetal anemia.
3. Timing of delivery should be individualized, balancing the risk of stillbirth, the consequences of fetal anemia, and the risks of another FBS/IUT.
4. Identification of genetic cause will help in planning the future pregnancy.

P16

KABUKI SYNDROME - A CASE REPORT

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BACKGROUND

Kabuki syndrome is a rare autosomal dominant disorder characterized by a range of malformations and intellectual disability. The primary clinical features are distinctive facial characteristics, skeletal deformities, abnormalities in dermatoglyphics, growth retardation following birth, and varying degrees of cognitive impairment, alongside other structural and functional anomalies that can affect multiple organ systems. 55-80% of affected individuals exhibit nonsense or frameshift mutations in the KMT2D (MLL2) gene.

CASE REPORT

We report a late preterm born who was antenatally detected to have ascites and horseshoe kidney. Postnatally baby had small mouth, receding chin, mild facial puffiness, mild pleural effusion, gross ascites (Ascitic fluid analysis was negative for atypical/malignant cells), vulval edema and developmental dysplasia of hip. Baby required oxygen for 3days. Ascites and effusion gradually subsided by day 5 of life. 2D ECHO revealed physiological PAH with structurally normal heart. Neurosonogram revealed no structural abnormality. TORCH Profile and Parvovirus IgM were negative. Karyotyping was normal. USG of hepatobiliary system was normal. Thus common causes of non immune fetal hydrops were ruled out. Rapid exome sequencing revealed pathogenic KMT2D gene positive. Baby was discharged on day 9 of life.

CONCLUSION

We recommend Kabuki syndrome to be considered as a cause for prenatal hydrops and advocate for a review of its molecular etiology and an expansion of its associated phenotype.

P17

Title: CONTINUOUS GLUCOSE MONITORING IN THE MANAGEMENT OF HYPOGLYCEMIA IN NEONATES

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a) Introduction:

Normoglycemia is critical in neonates to prevent adverse neurodevelopmental outcomes. High-risk neonates undergo frequent glucose monitoring using point-of-care (POC) glucometers. Continuous Glucose Monitoring (CGM) offers the advantage of detecting silent hypoglycemia while reducing the need for frequent needlesticks. This study evaluates the accuracy of CGM compared to standard laboratory glucose measurements.

b) Aims & Objectives:

To assess the diagnostic accuracy of CGM in high-risk neonates by comparing it with standard laboratory glucose measurements and evaluating the percentage of time spent in the euglycemic range.

c) Material & Methods:

This study was conducted in a tertiary care hospital over three months (April–June 2022). Neonates aged ≤ 72 hours at high risk for hypoglycemia were enrolled. Freestyle Libre CGM sensors were placed on the lateral thigh, with interstitial glucose measured every minute. Laboratory blood glucose values were used for comparison. Spearman's correlation coefficient assessed the agreement between CGM and laboratory readings. Procedural pain was measured using PIPP scores.

d) Results:

Thirty-one neonates were enrolled, with a procedural success rate of 100%. Median gestational age was 37 weeks, and mean birth weight was 2381.6 g. CGM correlated strongly with laboratory glucose (Spearman's $\rho = 0.86$, $p < 0.001$). Neonates spent 90% of time in the euglycemic range. Pain was short-lived, and complications were minimal.

e) Conclusions:

CGM is an accurate and feasible method for glucose monitoring in neonates, showing strong correlation with laboratory values, minimal pain, and few complications.

P18

TITLE: A Rare case of a newborn with distal trachea esophageal fistula/ esophageal atresia/ duodenal atresia/ high anorectal anomaly with colovesical fistula successfully treated simultaneously with single stage surgery

AUTHORS: Dr.Ancy jenilet.R, Dr.Saravanan.M, Dr. Vijay Anand, Dr. Vinodh.c, Dr.Sathish

INTRODUCTION: Tripple atresia (oesophageal atresia, duodenal atresia, anorectal malformation) with trachea oesophageal fistula is rare. And their co existence is even rarer with reported incidence of 2%. This report describes a case of a newborn diagnosed with triple atresia with TEF treated simultaneously with single stage surgery.

CASE: male infant born to a Primigravida and non consanguineous parents, through caesarean section at 37 weeks of gestation with birth weight of 1.93 KGS, presented with frothy secretions and inability in passing feeding tube and had a single umbilical artery. Radiography done showed coiling of feeding tube with double bubble sign with bilateral hazy lung field. Ultrasound showed duodenal atresia, high anorectal anomaly with absent anus. 2Decho showed features of large sized OS ASD, large PDA. At 20 hours of life, Tracheo oesophageal fistula division and esophago-esophagostomy, laparotomy - diamond duodenoduodenostomy + high pelvic colostomy was performed. A transanastomotic nasogastric feeding tube was placed and right ICD was placed and abdominal drain kept. Baby was on ventilator support for 11 days post surgery and ICU stay for 2 months. Baby was discharged at 70 day of life.

RESULT: Baby is taking oral feeds well, thriving well, and on regular followup, waiting for colostomy closure and anoplasty later.

CONCLUSION: Triple atresia remains a complex condition and a challenging combination of anomalies to treat with few cases reported in the literature.

P19

Title: Salmonella typhi sepsis in neonates: Not an uncommon entity.

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Abstract word count-

Introduction: Salmonella species sepsis is rarely encountered in neonatal intensive care unit. Published literature reveals it to be involved in both early and late onset sepsis in neonates. We present three cases of salmonella typhi septicaemia which have different mode of presentation and disease severity.

Case description: Case A is an appropriate-for-age female baby born at 37 week of gestation with uneventful antenatal history who was managed initially for transient tachypnea of newborn which improved in 18 hrs. Baby presented with new onset respiratory distress, poor perfusion, diarrhea with severe metabolic acidosis at 36 hours of life. Investigation showed S.Typhi sepsis and responded in 72 hours and discharged on day 15. Case B is a 35 week preterm appropriate-for-age baby on mixed feeding who presented at day 28 of life with failure to thrive and loose motion with encephalopathy. Investigation revealed blood and CSF culture positive sepsis with frontal lobe multiple brain abscess. Gastroenteritis and dehydration improved in 48 hours, but seizures and encephalopathy continued, succumbed on day 7 of treatment. Case C is a term baby on predominantly breastfeeding which presented on day 21 of life with poor feeding and fever. Investigation showed culture positive salmonella typhi sepsis. Baby improved without any complications or sequelae.

Conclusion: We encountered three different presentation including both early onset with possible vertical transmission and late onset sepsis with horizontal transmission. Clinical presentations were variable ranging from uncomplicated sepsis to severe sepsis with shock to brain Abscess and death. Salmonella typhi is not uncommon entity in developing countries possibly due to faulty feeding practices.

P20

TITLE: "GLYCINE GONE WILD-TAMING THE STORM IN NEONATES"

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PLACE OF STUDY: INSTITUTE OF CHILD HEALTH AND HOSPITAL, EGMORE

BACKGROUND: The incidence of this disease is underestimated as most of them die in early life before the condition is diagnosed,that is why it is important to keep in mind inborn errors of metabolism in neonates with altered consciousness.

CASE DETAILS: A 2 days old baby girl presented with vomiting,lethargy,hiccups and respiratory distress was born through full term normal vaginal delivery.Pregnancy was complicated by gestational diabetes mellitus.In view of encephalopathy baby was intubated.Baby also had seizures and perfusion abnormalities which was managed with AED's and inotropes respectively.Lumbar puncture showed klebsiella growth and she was started on appropriate antibiotics.All metabolic parameters were normal.Tms revealed elevated glycine (1063).MRI Brain showed focal diffusion restriction in B/l corona radiata dorsal brain left occipital lobe,thin SDH through posterior bone suggestive of inborn errors of metabolism.Genetic analysis revealed the diagnosis of "Non ketotic hyperglycinemia".Baby was started on IEM cocktail,sodiumbenzoate,Dextromethorphan.

Her general condition improved and discharged.

DISCUSSION: No absolute cure has been found yet for NKH.Treatment aims in reduction of glycine burden and antogonism of neurotransmitter effects of glycine.Frequent hiccups with encephalopathy is an important diagnostic clue.It is important to recognise the condition early as genetic counseling and prenatal diagnosis can be offered in subsequent pregnancies.

P21

SPECTRUM OF MALFORMATIONS OF CORTICAL DEVELOPMENT – A CASE SERIES

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INTRODUCTION

Malformations of cortical development (MCD) comprise a large, heterogeneous group of disorders of disrupted cerebral cortex formation caused by various genetic, infectious, vascular, or metabolic etiologies with an estimated incidence around 1 in 1,00,000.

MCD may cause significant morbidity at any age, but mostly symptom onset ranges from early childhood to early adult age, manifested as epilepsy, developmental delay, intellectual disability or cerebral palsy.

CASE DESCRIPTION

We report 3 cases of MCDs all of them having varied spectrum of clinical features but having similar findings in neuroimaging.

Table 1. Clinical details

Clinical parameters	Case 1	Case 2	Case 3
Antenatal history	No consanguinity Folic acid intake from 2nd month. ANS &Mgso4 completed.	3rd degree consanguinity, Folic acid intake from 2nd month. ANS not received.	2nd degree consanguinity Folic acid intake after 3 months of gestation. ANS not received.
Maternal profile	23 years old G2P1L1	22 years old G2P1L1	28 years old,G6P3L1A2 GDM,GHTN, Hypothyroid
Intrapartum details	31+6 weeks,1.6kg,male. LSCS in view of nonreactive CTG, severe oligamnios,,breech.	36+6 weeks,2 kg,male Oligamnios, induced,preterm vaginal delivery at outborn centre. Perinatal asphyxia	34+1 weeks,2.09kg, female. LSCS in view of severe preeclampsia, papilledema and PPHN. Perinatal asphyxia
Previous baby	Normal	Normal	1 baby with CAH,2 infant deaths,2 spontaneous abortions
Postnatal	Hypotonia since	Recurrent seizures	Primary microcephaly,

neurological clinical features	birth	since 1 hour of life,Microcephaly,severe HIE,Subdural hygroma	super refractory seizures, apneic episodes.
Neuroimaging findings	Lissencephaly, cystic PVL	Microcephaly with simplified gyral pattern/microgyria, subdural hygroma,severe HIE & PVL,moderate atrophy of cerebral cortex	Lissencephaly
Other diagnosis	RDS		RDS, shock ,VAP,hypoglycemia
Associated anomaly	Arthrogryposis multiplex congenita,OS ASD		Bilateral CTEV
Lab investigations	CPK 328 IU/L Electrolytes normal	TMS normal study Electrolytes normal No growth in blood culture	Thrombocytopenia, No growth in blood culture, Electrolytes normal
Outcome	Discharged, on follow up, mild developmental delay, limb deformity improving-DB splint, OS ASD closed.	Discharged ,on follow up with recurrent hospitalizations for seizures,respiratory infections and severe malnutrition	Expired on day 34 of life.

Table 2: Clinical exome results

Case	Gene	Location	Variant	Zygosity	Disease	Inheritance	Classification
1	Not send						
2	QARS1	Exon 17	c.1574G>A p. Arg525Gln [109X/109X]	Homozygous	Microcephaly, progressive, seizures, and cerebral and cerebellar atrophy	Autosomal recessive	Uncertain significance
3	Not send						

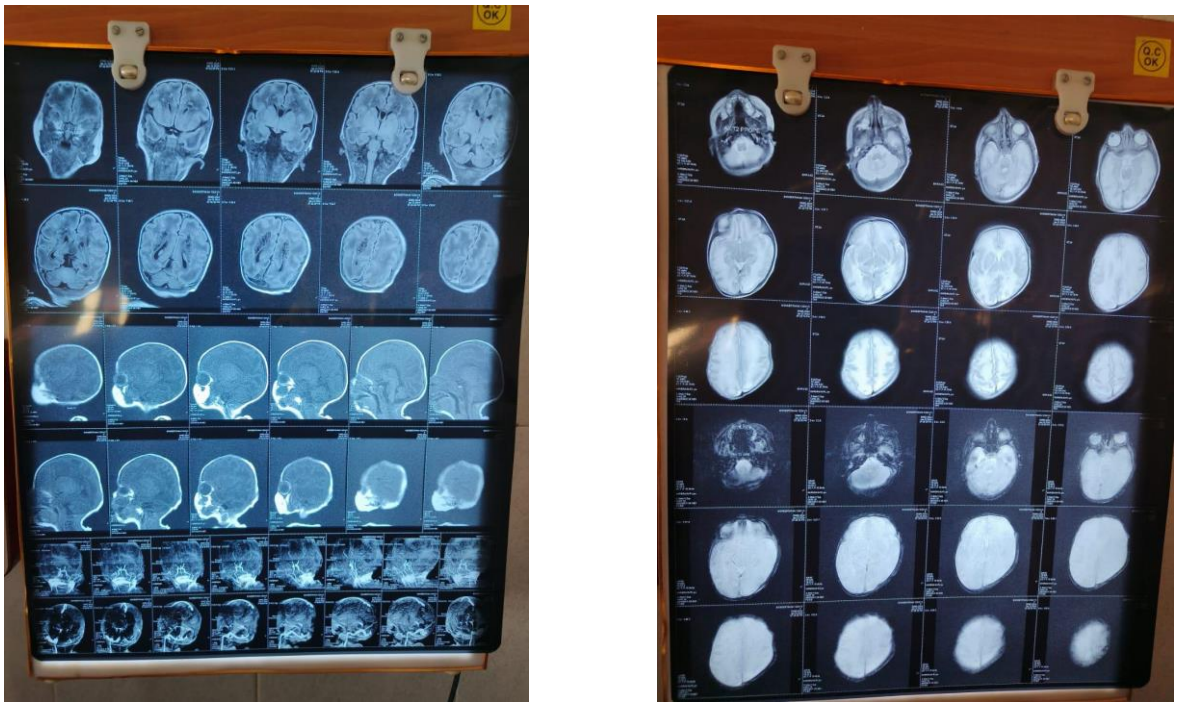

Figure 1-Neuroimaging pictures of Lissencephaly- abnormal gyral pattern with absent gyri (agyria) / broad gyri (pachygyria)

DISCUSSION

MCD are frequently associated with the drug-resistant epilepsy as well as neurological and intellectual impairment.

The complex nature and high degree of clinical, neuroimaging and genetic heterogeneity of MCD require a multidisciplinary approach.

TAKE HOME MESSAGE

- Wide spectrum of MCD.
- Keeping a high index of suspicion about MCD in neonates with primary microcephaly/seizures and evaluating for etiology
- Significance of genetic diagnosis and genetic counselling.

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P22

NEONATAL MYELOPOIESIS : THE TRANSIENT TUG OF WAR BETWEEN NORMALCY AND DISORDER

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BACKGROUND

Transient abnormal myelopoiesis [TAM] is found in approximately 10% of neonates with Down's syndrome due to proliferation of abnormal hematopoietic precursors caused by genetic instability in the presence of trisomy 21 and by acquisition of mutations in the GATA1 gene.

CASE CHARACTERISTICS

2 days old female child with downs phenotype referred with

- Icterus
- Hepatosplenomegaly
- Respiratory distress
- Leukocytosis (>10% blasts)
- Thrombocytopenia
- Anemia

Investigations

- Karyotyping: 47 XX+21
- Peripheral smear : normocytic normochromic RBC, atypical lymphoid cells ?blasts , thrombocytopenia
- Flow cytometry: Myeloid blasts +(CD 33, CD34, CD38, CD117, CD7)
- ECHO - common AV canal defect

-TSH 36.7, fT4 1.75

Findings favored diagnosis of transient abnormal myelopoeisis associated with Down's syndrome.

Treatment

Supportive care- Phototherapy, Antibiotics, CPAP

Inj. Cytarabine * 3 days (1.5 mg/kg/dose)

Thyroxine supplementation

OUTCOME

Child discharged with adequate weight gain and councelled regarding future risk of AML –M7 . Genetic analysis for GATA1 mutation awaited.

MESSAGE

Fetal TAM is a self-limiting condition which requires supportive care. In the neonatal period, most cases of TAM have a favorable outcome from this preleukemic condition, but some progress to leukemia. Investigation of TAM will continue to strongly influence basic and clinical research into development of hematological malignancies

P23

THE BLOCKED BEGINNING- UNRAVELING THE CHALLENGES OF ILEAL ATRESIA TYPE 4 WITH TIMELY SURGICAL SUCCESS

AUTHOR: Dr.C.Karthikeyan, 2nd year postgraduate

CO-AUTHOR:Professor Dr.Luke Ravi Chelliah MD.,

Institute of child health, Egmore,Chennai

BACKGROUND:

Intestinal atresia is one of the most frequent causes of bowel obstruction in newborn. Ileal atresia is an acquired lesion resulting from vascular disruption leading to ischemic necrosis of a segment of the fetal intestine.It is of 4 types with type 4 presenting with multiple atresias.

CASE PRESENTATION:

A 1st born of NCM, term male baby via NVD with birth weight of 2.56kg & no maternal comorbidities with AN scan suggestive of dilated fetal bowel loops, presented at day 1 of life with abdomen distension, bilious vomiting and not passed meconium since birth. O/E baby vitals-stable, P/A-distended,non tender abdomen with no visible bowel loops.Other system examination-normal. On rectal stimulation with infant feeding tube, no meconium passed.

INVESTIGATIONS:CBC, RFT,S.Electrolytes,LFT were normal with elevated CRP.

XRAY Chest &Abdomen: Dilated bowel loops with absent rectal gas shadow

Baby was immediately taken up for emergency laparotomy and resection of distal ileal atretic segment with primary ileoileal anastomosis was done.Post op, baby was treated with IV antibiotics and started on feeds and discharged on POD-12. Screening for associated cardiac anomalies & cystic fibrosis-normal.

DISCUSSION:

The need of skillful continuum of care from prenatal diagnosis to post-operative care marks the surgical success of intestinal atresia.

CONCLUSION:

Incorporating prenatal foetal ultrasound with pre-op stabilisation of babies from initial diagnosis by referring doctors, availability of parentral nutrition post-operatively will change the prognostic image.Such case reports will increase awareness among the medical personnel to increase their level of suspicion and improve the clinical acumen.

P24

ABSTRACT

TITLE - A RARE CASE OF EARLY PRETERM / RESPIRATORY DISTRESS SYNDROME / AMNIOTIC DEBRI CYST WITH GASTRIC OUTLET OBSTRUCTION

AUTHORS – DR.Saravan prabhu.S,DR.Saravanan.M,DR.Vinodh.C,DR.Vijay anand.C,DR.Satish Kumar

PLACE - RIO HOSPITAL, MADURAI

CASE DISCUSSION - Early Preterm boy neonate born to primigravida and nonconsanguineous parents ,through caesarean section at 30+6 weeks of gestation with birth weight of 1.2 kg , presented with abdominal distention and repeated episodes of non bilious vomiting on day 4 of life and in view of respiratory distress baby was intubated. Xray showed well defined cystic lesion occupying the Left hypochondrium shifting the diaphragm upwards , CT Abdomen showed grossly distended stomach filled with soft tissue material and suspected to have an organized collection of meconium/ amniotic debris filling the stomach .Xray done on day 4 of admission showed persistence of lesion with significant reduction (probably secondary to contrast given with CT) . Hence trail of oral MUCOMIX was started along with pancreatin .Abdominal distention decreased gradually , OG feeds were increased to full oral and baby tolerated well .Repeat xray showed significant reduction of opacification .

CONCLUSION – Rare case of Amniotic debri cyst with Gastric outlet obstruction which was managed with Oral MUCOMIX which showed significant reduction in size of cyst and baby improved symptomatically .

P25

"Adrenal Insufficiency with XYDSD: A Rare Presentation of MIRAGE Syndrome in a Neonate"

AUTHORS- Dr Radhika D R, Dr Rajat Assoldekar, Dr Kavita Sreekumar, Dr Annely D'Lima , Dr Vaishali Joshi

ABSTRACT-

Introduction:

MIRAGE syndrome is rare autosomal dominant disorder characterized by Myelodysplasia, Infection, Restricted growth, Adrenal hypoplasia, abnormal Genital phenotype, and Enteropathy. It is caused by mutations in the SAMD9 gene. We report a case of neonate with adrenal insufficiency, phenotypically female at birth, but later confirmed to have male karyotype.

Case Description:

A female neonate born out of nonconsanguineous marriage at 31.4 weeks of gestation, asymmetric IUGR with hyperpigmentation at birth, suspected carbon baby syndrome or dermal melanosis. Baby had deepening of hyperpigmentation and acute worsening of symptoms on day 4 of life with investigations suggestive of acute adrenal crisis including hyperkalemia and hyponatremia, metabolic acidosis, polyuria and severe dehydration. Blood investigations revealed very high ACTH with low 17-OH progesterone and testosterone suggestive of proximal steroid biosynthesis pathway defect. Baby had hematological derangements including anemia, thrombocytopenia and feed intolerance with repeated interruptions of feeds. Baby responded to hydrocortisone and fludrocortisone with improvement in skin color, however had persistent failure to thrive despite optimizing calorie intake. Further evaluation revealed 46XY karyotype, absence of gonadal tissues and whole exome sequencing confirmed heterozygous missence variant c.2054G>A in exon 3 of SAMD 9 gene suggestive of MIRAGE syndrome. To the best of our knowledge such case has been reported approximately less than 50 instances worldwide and first of such case reported in India.

Conclusion:

Early diagnosis and evaluation for adrenal insufficiency along with genetic analysis is essential for diagnosing rare genetic disorders like MIRAGE syndrome, allowing for timely management and appropriate genetic counseling.

P26

Title-Study to define optimal duration of intermittent phototherapy for the planned RCT to compare with continuous phototherapy in treatment of non hemolytic hyperbilirubinemia

Authors-Namrata Kumari, S.Manikumar,Mohammed Sajjid

Introduction-Phototherapy is the main mode of therapy for neonatal unconjugated hyperbilirubinemia. It helps to reduce the rise of serum bilirubin concentration, regardless of maturity, presence or absence of haemolysis or degree of skin pigmentation. The efficiency of phototherapy is related to the starting bilirubin concentration and efficiency will fall as the level of serum bilirubin decreases.Phototherapy given intermittently would make time for nursing care of the baby, feeding, kangaroo mother care, building mother and infant bonding, saves time and work load on nurses and also reduces the cost of phototherapy. This study is planned to determine the optimal duration of intermittent phototherapy which is being used for RCT planned to compare intermittent and continuous phototherapy for treatment of non-haemolytic hyperbilirubinemia

Aims and objectives-To define the optimal duration of intermittent phototherapy in terms of on and off duration

Materials and methods-For defining the duration of on phototherapy, the duration at which maximum fall in bilirubin occurs during phototherapy is derived.For this, 5 babies who are started on phototherapy ,serial TcB measurement at 30 min interval for the first 5 hours are done .These values were plotted on graphand compared.Similarly for defining the off duration ,serial capillary bilirubin values measured at 30 min interval in 2 babies on stopping of phototherapy to determine the time of rebound of serum bilirubin, these values plotted on graph and compared.

Results-The serial TcB measurement plotted on graph in 5 cases ,maximum fall occurred at 3 hours while the baby is on phototherapy, so on duration of phototherapy defined as 3 hours.For off duration,Rebound of serum bilirubin in 2 babies following stopping of phototherapy is around 3 hours,so off duration defined as 3 hours

Conclusion-Following this study, intermittent phototherapy is defined as three hours on and three hours off,to be used in RCT planned to compare with continuous phototherapy for treatment of neonatal non-haemolytic hyperbilirubinemia

P27

NOHK Profile in Premies

ABSTRACT:

Introduction:

Preterm infants present with hyperkalemia with normal urine output in the first few days of life. It is called as non-oliguric hyperkalemia (NOHK).The immature sodium-potassium ATPase pump leading to membrane instability and intracellular potassium shift is the most widely suggested pathophysiology. The study aimed to identify the risk factors, clinical profile, and outcome of babies with non-oliguric hyperkalemia in our population.

Methods: This is a retrospective cohort study done between April 2022 to June 2022.Inclusion criteria included all the preterm infants (<32weeks) admitted to our NICU from November 2018 to November 2021(n=322). Neonates with any major congenital malformations or congenital renal anomalies were excluded. Structured proforma was made and data was collected from case records obtained . Non-oliguric hyperkalemia in preterm infants in their first 72 hours of life is serum potassium > 6.0 mmol/L and urine output > 0.5 ml/kg/hour in the non hemolyzed sample. The babies were divided into two categories - babies with non-oliguric hyperkalemia (NOHK) and those without NOHK. The antenatal, natal, and postnatal events were analyzed among the two groups.

Results:

Of the 310 eligible neonates, 149 were NOHK and 161 neonates were non- NOHK babies. The mean gestational age in NOHK babies was 28.8 (SD-1.95) and in non-NOHK babies was 29.46 (1.83) [p value -0.007]. After adjusting for confounding factors, results were analysed. The significant risk factors found for NOHK were the incomplete course of antenatal steroids[p value-0.004] and Doppler abnormalities in antenatal scans (OR (95CI) 2.132 (3.85), p value- 0.011). The incidence of intraventricular hemorrhage (p value -0.03) and blood urea nitrogen levels [OR (95 CI)0.98(0.97-1.0), p value-0.012] was significantly higher in babies with NOHK. There was observed increase in mortality in NOHK group but was not statistically significant. Among the NOHK population ,118 babies received conservative management and only 31 babies required intervention such as insulin dextrose infusion or calcium gluconate infusion. The incidence of arrhythmias was significantly high (p value- 0.0001) in babies with NOHK who expired.

Conclusion:

Incomplete antenatal steroid treatment and abnormal Doppler findings in prenatal scans were identified as significant risk factors for NOHK. Babies with NOHK exhibited higher rates of intraventricular hemorrhage, elevated blood urea nitrogen levels, and increased mortality.

P28

Abstract

Title: Role of Respiratory Stabilization for Successful Intubation in Neonates: A Randomized Controlled Trial.

Introduction: Endotracheal intubation often results in physiological instability in neonates.Continuing preexisting respiratory support during intubation may increase its success rate.

Aim & Objectives: To study the effect of providing respiratory support (continuous positive airway pressure or nasal high flow or low flow oxygen therapy) compared to no support on successful intubation. Primary outcome was rate of first-attempt successful intubation without physiological instability, defined as desaturation (absolute decrease in peripheral oxygen saturation, SpO_2>20% from baseline) and/or bradycardia (heart rate<100/ minute) during the procedure. Secondary outcome was rate of local trauma.

Place: AIIMS Rishikesh, Uttarakhand.

Methods: The present assessor-blinded randomized control trial (CTRI/2023/04/051946) allocated 150 neonates undergoing intubation in NICU to respiratory support (n=75) and control (n=75) groups. Experienced neonatology fellows performed all intubations. Entire procedure including vital monitoring was video-graphed.Analysis was donein SPSS version 27 on intention-to-treat basis.

Results: Baseline characteristics of the study neonates were comparable. Eighty-nine and 78.0% of neonates were already on respiratory support before intubation in intervention and control groups, respectively. Mean airway pressure, oxygen concentration and SpO_2 prior to randomization were similar. Primary outcome could be achieved in 55(73.3%) vs 47(62.7%) neonates in intervention and control groups, respectively [RR 1.3(0.9–1.7);p=0.161]. Median (IQR) duration of firstattempt intubation in neonates achieving primary outcome was 32.0(22.0–49.0) vs 32.0(22.0–46.0) seconds, p=0.936. Rate of local trauma during intubation was comparable. Thirty-six and 38.7% of the neonates expired in both groups, respectively.

Conclusion: Respiratory stabilization during intubation does not affect first-attempt successful intubation rates.

P29

Title: Mother's own milk in postnatal ward: A quality improvement study

Author Names: Harsha Kumar[1], Abhishek S Aradhya[1], Akshaya Doddamani[2], Hellen[3], Gudi Vedavani[4], Rashmi[4], Sahana[4].

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Word count - 235 Character count - 1544

BACKGROUND:

Mother's milk is the ideal nutrition and right of every child. Despite recommendations, exclusive breastfeeding (EBF) in the first few days is a recognised problem. We used a point of care quality improvement (POCQI) to implement use of mother's own milk in postnatal wards over a period of 12 weeks through a series of Plan-Do-Study-Act (PDSA) cycles.

METHODS:

All inborn neonates in the postnatal ward were eligible. The fishbone analysis identified the causes of gaps in the quality. The key quantitative outcome was the percentage of neonates receiving mother's own milk till discharge (2 days). After recording the baseline data on exclusive breastfeeding rates, 3 PDSA cycles were sequentially completed over 12 weeks. The results of each cycle informed the change strategy in the next cycle.

RESULTS:

One hundred and fifty five mother-infant dyads were part of this QI study from June to August, 2024. Fishbone analysis revealed a knowledge-practice gap amongst nurses and mothers, inappropriate formula feed prescription as process concerns. Sensitization, video training of mothers on latching, SOP and standardized formula feed prescription, audit (including root-cause analysis) of formula feed usage, routine LATCH score monitoring to identify mothers needing help etc were the strategies helped to implement over 12 weeks. EBF significantly improved from a baseline of 65% to 80% over 12 weeks.

CONCLUSIONS:

Using a POCQI methodology, mother's own milk administered to the neonates was improved by empowering mothers on latching.

P30

Title: Study Of Clinico-Etiological Factors Of Respiratory Distress In Neonates And Its Immediate Outcome in NICU, Dr B.R.A.M. Hospital, Raipur

Author & Presentor : Dr. Purnima Margekar

Co- Author :Dr. Sagar Kumar

Co- Author: Dr. Pratima Beck

Place of Study: NICU,Department of Pediatrics,Dr.B.R.A.M. Hospital,Raipur (C.G.)

ABSTRACT

Introduction: Respiratory Distress (RD) is one of the commonest causes of NICU admissions. Certain risk factors increase the likelihood of neonatal respiratory disease. Regardless of the cause, if not recognized and managed quickly, respiratory distress can escalate to respiratory failure and cardiopulmonary arrest. The present study conducted to study the clinic-etiological profile of respiratory distress in neonates and evaluate its immediate outcome.

Aims & Objectives: To study the clinic etiological factors of respiratory distress in neonates admitted in NICU and its immediate outcome.

Material & Methods: A prospective cross-sectional study conducted in NICU, Department of Pediatrics, Dr.BRAMH, Raipur. 182 both inborn and out-born neonates admitted in NICU with RD, within 72 hours of birth were included. Severity of RD was assessed by Downe's score (term neonates) and Silverman Anderson score (preterm neonates).Data was analyzed using SPSS.20 version.

Results: Out of 182 admitted newborns (57.14%) were male. Mean gestational age was 34 weeks & (49%) were term, (51%) were preterm and(74%) were LBW. Among neonates (44%) required resuscitation at the time of birth & 26% had MASF. PROM was present in (21%) and Prolonged labour was present in (20%) deliveries, 40% delivered by LSCS. Majority Preterm had SAS score 7 and among Terms majority had Downe's score 6. Among admitted neonates (15%) died.

Conclusion: The commonest cause for respiratory distress in neonates is RDS followed by, Birth asphyxia, TTN, MAS and Sepsis. Majority deaths occured in ELBW(<1000gms) and with those who had RDS,MSAF and Sepsis.

Key words: Respiratory distress, neonates, Outcome

P31

An intracranial dermoid Cyst disguised as intracranial hemorrhage in a neonate – A Case Report

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Introduction: Dermoid cysts (DC) are rare space-occupying, benign tumors of the central nervous system. We present an intracranial extra-axial dermoid cyst presenting in a newborn.

Case presentation: An out-born moderate preterm neonate presented to our facility at 50 days of age. At birth, the neonate was resuscitated and received surfactant and nasal CPAP for stabilization. At 5 hours of life, the neonate experienced multiple seizure episodes necessitating administration of multiple anti-epileptic medications. On day 6 of life, the neonate developed shock and coagulopathy. Bedside neurosonogram revealed periventricular hemorrhagic infarction on right side with left ventriculomegaly. Subsequent neurosonogram showed progressive ventriculomegaly, tone abnormalities and intermittent convulsions, prompting transfer to our unit. Baseline blood investigations and MRI revealed findings consistent with an extra-axial hypodense lesion on the right cerebral hemisphere with midline shift towards the left and left ventriculomegaly. The neonate underwent prompt craniotomy, which revealed a thick-walled, well-encapsulated mass with pultaceous material, suggestive of a DC. The cyst was partially excised, and a sample was sent for histopathology. Postoperatively, the neonate continued to have myoclonic seizures and subsequently developed shock. Despite all efforts, the neonate succumbed on post-operative day 7.

Conclusions: DCs, while not consistently present at birth, tend to manifest early in life, characterized by a slow growth phase following a latent period. The standard treatment involves excision without disruption of cyst wall. The prognosis is generally favourable. However, prognosis may be poor if they become symptomatic due to local compression, rupture, or infection, as evidenced in our specific case.

P32

TRANSIENT ABNORMAL MYELOPOIESIS

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INTRODUCTION:

Neonates and infants with Down's syndrome infrequently develop a condition known as transient abnormal myelopoiesis (TAM).

AIM:

to present a case of TRANSIENT ABNORMAL MYELOPISIS IN DOWNS SYNDROME newborn.

DISCUSSION:

A TERM/ AGA , With normal perinatal transition. Birth weight of 2700gms. on examination baby had downs phenotype, pallor, icteric. Cardiac murmur, hepatosplenomegaly, hypotonia.Baby showed elevated TotalCount,(TC) peripheral smear (PS) showing leucoerythroblastic blood picture with thrombocytosis, hematology opinion was obtained, advised to do flowcytometry, diagnosed as TAM and to start on subcutaneous cytarabine for 3 day. In hematology review advised no need for further treatment of TAM, ,ECHO done showing COMPLETE common AV canal defect, advised to continue antifailure drugs. .Karyotyping showed Downs syndrome.TSH was elevated, in view Congenital hypothyroidism T.Thyroxine was started. Baby responded to subcutaneous cytarabine, TC decreased and came to normal level. Flow cytometry- 5.5% myeloid blast (CD33,CD34,CD38,CD117,CD7.PS-corrected WBC- 56486, myelocye 4%/metamyelocyte3%, neutrophils-13%, lymph-77%, monocytes-1%, 48% binucleated and multinucleated RBC seen.Imp- leucoerythroblastic blood Pic-atypical lymphoid blast cells- 10%

CONCLUSION:

Transient abnormal myelopoiesis (TAM) is the clonal proliferation of myeloid blast cells which affects an estimated 5-10% of newborns with Down'ssyndrome. It is also uncommonly described in phenotypically normal neonates with trisomy 21 mosaicism. The majority cases of TAM are asymptomatic at presentation and picked up incidentally on routine hematological testing. Most cases of TAM resolve with spontaneous remission over the first few months of life, but 13-33%may go on to develop AML within the first four years of life

P33

Continuous Renal Replacement Therapy In An Extremely Low Birth Weight 600gram, Preterm (25week, 1 Day) Neonate.

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Funding: None

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ABSTRACT

Background: The need for renal replacement therapy (RRT) is increasing among critically ill neonates. We herewith report an extreme preterm born at 25 weeks gestation who underwent continuous renal replacement therapy for acute kidney injury stage 3 (AKI stage 3) at two weeks of age.

Case description: This 9-day-old female infant (birth weight-690 grams) was diagnosed with MIS-N with MODS. She has received aggressive ventilator support, inotropes support, and other support. On day 11 of life, because of worsening renal parameters with dyselectrolytemia, continuous renal replacement therapy (CRRT) was performed.

Procedure: Continuous veno-venous hemofiltration (CVVH) was initiated through the umbilical vein and artery. The total extracorporeal volume was reduced to a total volume of around 60 ml by manual adjustment, and circuit priming was done with blood. Blood flow was set at 10 ml/ min, replacement fluid was set in predilution mode at 20 ml/ min, and Ultrafiltrate was set at 1 ml/hour. Blood comes out through umbilical artery and, after dilution reaches the dialysate, further reaches infant through umbilical vein.

Discussion: Our center is implementing CRRT earlier for metabolic issues, sepsis, and AKI. This marks the first successful case involving an extremely preterm infant with very low birth weight, potentially making this the smallest and most preterm infant to receive successful CRRT documented in global literature.

Conclusion: This case report adds to the feasibility of the procedure even in the extreme preterm of 25 weeks with a birth weight of 600 grams.

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SUPRAUMBLICAL PERITONEAL DIALYSIS IN NEONATES – A NOVEL APPROACH

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INTRODUCTION:

Acute kidney injury in neonates is multifactorial and neonates remain vulnerable due to various risk factors. There are several types of catheters and insertion techniques. Most commonly used sites for placements are lower abdominal quadrant or in the midline as infraumbilical approach. Supraumbilical approach for peritoneal dialysis has not been described in neonates. We aimed to evaluate the safety, efficacy and clinical outcomes of supraumbilical peritoneal dialysis in neonates at our centre.

METHODS: This is a retrospective study done in a tertiary care NICU during 2021-2024. We included 6 neonates requiring supraumbilical peritoneal dialysis for various indications. 8 or 10 Fr TROCAR cannula (Vygon) or 8Fr soft pigtail catheter (Bluemeen) were used for placement during peritoneal dialysis.

RESULT

Mean body weight was 1783 ± 366.6 grams, and the mean gestational age was 34.3 ± 3.2 weeks.5 male and 1 female were taken for study. Mean age at the moment of starting peritoneal drainage was 1.6 ± 0.2 days. Mean duration of PD was 114.6 ±60.4 hours Indications for peritoneal dialysis were acute kidney injury grade III (50%), acute kidney injury grade III with chronic kidney disease (16%), 33.33% had hyperammonaemia. Supraumbilical peritoneal dialysis was found to be safe and effective in doing peritoneal dialysis with less chances of dialysate leakage and drainage related problems. One patient had omental prolapse while inserting the PD cannula which was managed supportively, and no other major complications were noted during supraumbilical peritoneal dialysis. Mortality was 33.3% (2/6). 2 neonates died due to DIC with multiorgan dysfunction with acute kidney injury grade III and sepsis.CONCLUSION: Supraumbilical peritoneal dialysis placement is feasible, safe and effective method for early initiation of dialysis therapy and is a promising technique to optimise catheter placement and reduce complication associated with traditional infra umbilical placement.

P35

Title: Clinical profile of a rare case of Genitopatellar syndrome

Authors: Dr. Sarvesh Komarpant, Dr. Kavita Sreekumar

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Case Report:

Baby was born to G3P1A1 mother at 34 weeks of gestation by LSCS with a birth weight of 1.6 kg. No consanguinity present, Antenatal ultrasonography in the third trimester had revealed bilateral hydronephrosis with polyhydramnios. Baby underwent an uneventful transition to extra-uterine life but was noted to have multiple anomalies. These included dysmorphic facies, subluxation of both knees, flexion contractures of both knees, ambiguous genitalia with absent scrotal sac but phallus present.

Baby was admitted to NICU, had an uneventful course in hospital. No electrolyte imbalances were noted.

Karyotype report showed 46XY pattern and Ultrasonography of abdomen showed presence of testes. 2D-Echocardiography showed presence of OS-ASD. Whole exome genome sequencing revealed KAT6B mutation (NM_012330.4) variation c.3665-IG>C; classified as likely pathogenic.

Child is currently 4 months of age, has been admitted to hospital on multiple occasions with lower respiratory tract infections and failure to thrive. Child has global developmental delay and is under close follow up.

Discussion - Genitopatellar syndrome is a rare disorder consisting of microcephaly, severe psychomotor retardation, and characteristic coarse facial features, including broad nose and small or retracted chin, associated with congenital flexion contractures of the lower extremities, abnormal or missing patellae, and urogenital anomalies. It is inherited in an autosomal dominant fashion and most children have de novo mutations in the KAT6B gene. To the best of our knowledge, fewer than 20 cases have been reported worldwide and this is the first reported case in India.

P36

COMPARISON OF THYROID PROFILE BETWEEN SMALL FOR GESTATIONAL AGE AND APPROPRIATE FOR GESTATIONAL AGE NEONATES : A RETROSPECTIVE COHORT STUDY

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Background: Thyroid hormones play an integral role in the growth and neurocognitive development. Congenital hypothyroidism with an incidence of 1 in 1000-1500[1] , is the most common preventable cause of intellectual disability. Thyroid function in SGA neonates may have a role in catch up growth. Screening for congenital hypothyroidism is now universal , however the same cut offs are used for screening all neonates irrespective of the growth status. Hence we intend to study the differences in thyroid profile between SGA and AGA neonates in the early neonatal period.

Objectives: To compare the differences in mean TSH and fT4 levels at 48-72 hours between small for gestational age and appropriate for gestational age neonates.

Methodology:

It was a retrospective cohort study done at Chettinad Hospital and Research institute between August 2023-January 2024 , where 200 AGA and 200 SGA babies were included and their baseline characteristics, and thyroid profiles were compared. SGA was defined as birth weight < 10th centile on Fenton's growth charts[2]. Venous samples were taken at 48-72 h of life and serum TSH and fT4 levels were performed.

Results:

Total of 400 neonates were enrolled in the study . 200 SGA neonates were compared with a matched cohort of 200 AGA neonates. 84% were term and 16% were preterm neonates. The mean (SD) gestation was 38 weeks (± 1.4) and the mean birth weight (SD) was 2680 grams (± 470). Baseline characteristics were similar between the AGA and SGA groups. Overall 24% of mothers had hypothyroidism but was not different between the SGA and AGA groups (23% vs 25%; p=0.56). Overall , the mean (SD) TSH level (mIU/L) was 5.5(± 3.7) and fT4 level (ng/dl) was 2.01 (± 0.73). The mean TSH level (mIU/L) in SGA group was significantly higher compared to the AGA group (6.22 vs 4.87 ; MD 1.35(p =0.003) (95% CI 0.63,2.07)). The mean fT4 level (ng/mL) was also significantly higher in the SGA group (2.08 vs 1.94 ; MD 0.14 (p=0.013)). Overall 14% of neonates had TSH levels > 10 mIU/L and the difference was significant between the SGA and AGA groups (19.5% vs 9% ; p=0.003). 6% of neonates had low fT4 levels (defined as < 1.17 ng/dl) but was not different between SGA and AGA groups (5.5% vs 7% ; p=0.23)

Conclusion:

Serum TSH and fT4 levels done at 48-72 h of life are significantly higher in the SGA neonates compared to AGA neonates. The cut off values for screening congenital hypothyroidism may be different in the SGA population.

P37

Title of the study

THE DOWN AND HYPER DILEMMA - A RARE CASE REPORT OF NEWBORN

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Place of the study : Institute Of Child Health And Hospital For Children,Egmore.

Introduction: Congenital leukemia /Transient Abnormal Myelopoiesis is an extremely rare malignant disorder with an incidence of 5 per million births[1]. Mostly non lymphoblastic leukemia in contrast to ALL in later childhood. Associated with syndromic conditions like Down syndrome.

Case report: 37 weeker girl baby, with birth weight of 2.7kg, delivered to non consanguinous couple by normal vaginal delivery and had normal perinatal transition. AN scan shows polyhydramnios (AFI-20cm), Pericardial effusion, Grade III echogenic bowel. Fetal ECHO s/o cardiomegaly and pericardial effusion. Antenatal Doppler normal. Baby referred to ICH, on examination baby lethargic, mangoloid slant, short neck, hepatosplenomegaly, blueberry muffin spots present. Mother and baby blood group B negative. CBC-TLC >2lakhs, peripheral smear >60% blast cells, DCT- negative. Karyotyping 21 Trisomy pattern. In view of non immune hydrops features with hyperleukocytosis with high blast Transient abnormal Myelopoiesis/Congenital leukemia was considered. Flow cytometry showed AML M7 type. After starting chemotherapy (Cytarbine, T.Allopurinol for 3 days), Total count reduced and clinically baby improved.Now child 4 months old doing well and on regular followup with TLC count around 8000.Genetic test showed Heterozygous GATA1 mutation likely pathogenic for Leukemia.

Conclusion: Leukemia needs to be approached in such conditions with clinical features of sepsis and leukocytosis besides on oriented look for coincidental abnormalities. Early genetic diagnosis and prompt initiation of targeted chemotherapy enabled successful management of congenital leukemia with Down syndrome, highlighting the critical role of genetics in guiding treatment.

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1. Perkins SL. Hematopoietic system. In: Gilbert Barness E (Ed). Potter's pathology of the fetus, infant and child. 2nd ed. Elsevier 2007; pp. 1453-1514.

Keywords : Congenital Leukemia, Down's syndrome, Hyperleucocytosis, Chemotherapy.

P38

Successful management of Intrapericardial teratoma presenting with massive pericardial effusion at birth!!

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Introduction :

Intra pericardial teratoma is a rare fetal anomaly. Incidence of primary tumor of heart is 0.0017-0.8% and intrapericardial teratomas are even more rare . Most of them have mass effect causing compression of the heart structures and pericardial effusion causing the tamponade effect, foetal hydrops, arrhythmias, or severely compromised circulation. Here we present a newborn infant who was antenatally diagnosed with mediastinal mass with hydrops fetalis and successfully treated with surgical excision in neonatal period.

Case report :

A3.07kg boy baby was born at 35+1 weeks of gestation by emergency LSCS in view of nonassuring Non stress test, Baby did not cry at birth and was intubated after 2 cycles of bag and mask ventilation. Antenatal scan at 22nd gestational week revealed a cystic lesion in the mediastinum suggestive of thymic mass with pericardial effusion with bilateral pleural effusion. Baby was not saturating well (sp02-40%, Heart rate 110bpm)even on maximum settings on ventilator and had persistent shock inspite of fluid resuscitation. Functional ECHO was done and was noted to have a large pericardial effusion, for which immediate bedside pericardiocentesis was done and around 150ml fluid was drained. CECT done on D3 of life showed heterogenous mass around the heart suggestive of teratoma/Lymphoma. Baby was operated on D10 of life and intraoperatively was found to have a large bilobed mass with a stalk connected to right ventricle. Baby had ventricular fibrillation when the stalk was severed, for which defibrillation was given and was successfully resuscitated. Baby had a turbulent postoperative course following which baby was discharged on D37 of life.

Conclusion:

Intrapericardial teratoma is a rare tumor which may mandate immediate bedside pericardiocentesis and surgical excision for favourable outcome. Prognosis depends on the grade of tumor and screening with Alpha feto protein levels may help.

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A huge Heart that failed!

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Introduction : Cardiomyopathy is a heterogenous group of disorder of the myocardium associated with cardiac dysfunction. Dilated cardiomyopathy is the most common type in children. The clinical presentation varies depending on the type of cardiomyopathy and also the severity of presentation is varied. We present a term neonate who had a genetic cause of dilated cardiomyopathy.

Case :

A full term male neonate weighing 3500g born to a 32 year primigravida mother by normal vaginal delivery with no significant antenatal history. HE was roomed in with mother and was breast feeding well. On day of life 13 was noticed to have respiratory distress and was referred to our center.

At admission, he had a DOWNE score of 5/10, heart of 180/min, poor peripheral and central pulse, hepatomegaly of 5 cm. Chest radiograph revealed significant cardiomegaly without any lung pathology. He was mechanically ventilated and started on inj. Dobutamine and inj. Furosemide in view of cardiogenic shock. 2D echocardiography revealed dilated cardiomyopathy with severe biventricular dysfunction with ejection fraction of 25% along with large 8mm Ostium secondum atrial septal defect and a large 6mm apical muscular ventricular septal defect with non collapsible IVC.

Serial Echocardiography showed improvement in ejection fraction. His viral markers were positive for enterovirus, hence the cause of cardiomyopathy was attributed to viral myocarditis initially.TMS was reported as normal. However, in view of presence of structural anomalies in heart whole exome sequencing was also sent which was suggestive of a heterozygous missense variant in exon 157 of the *TTN* gene (chr2:g.178670274A>G; Depth: 95x) that results in the amino acid substitution of Threonine for Isoleucine at codon 11777 (p.Ile11777Thr; ENST00000589042.5). this being an autosomal dominant condition with a phenotype of dilated cardiomyopathy was considered significant and parental testing has been advised.

He was extubated to non invasive ventilation after 5 days and was transported to Delhi for further care.

Conclusion : Dilated cardiomyopathy is a rare condition in neonates and requires a high index of suspicion for successful outcome. An exhaustive workup should be done to determine the etiology. In our case genetic workup has helped identify a mutation which facilitated genetic counselling.

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Isolated pericardial effusion in a preterm neonate followed by a scary serendipity!- A case report

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Introduction

Isolated pericardial effusion is a rare condition in neonates. Historically, it was considered benign, however recent studies show that it can be the first manifestation of serious underlying disorder. Intracardiac thrombus in neonates is an extremely rare condition and may lead to fatal outocmes. We report an extremely low birth weight neonate who had pericardial effusion followed by right atrial thrombus which were treated successfully.

Case Report

A moderate pre-term 33+5 weeks gestation female with severe intrauterine growth retardation weighing 932g, born to a gravida three mother, delivered via emergency LSCS for doppler changes. She cried immediately after birth and shifted to NICU for preterm care.

At hour of life- 48, screening 2D echocardiography screening revealed isolated moderate pericardial effusion 4 mm in diastole. There was no dysmorphism, anemia or any other structural anomaly. At 60 hours of life, baby had increased respiratory distress with cardiogenic shock. USG guided bedside pericardiocentesis was done. Further imaging was suggestive of regressing effusion. Child remained asymptomatic and reached full enteral feed by day 7 of life. Her Peripherally inserted central catheter was removed on Day 7. On Day of life 15, a pre discharge re-screening 2-D echocardiography by neonatologist revealed an unexpected large echogenic mass in right atrium. Pediatric cardiologist opined it to be a thrombus. She was started on subcutaneous enoxaparin. Serial echocardiography revealed resolution of thrombus and enoxaparin was stopped after 6 weeks. Currently she is 8 months old and growing well.

Conclusion : Isolated pericardial effusion is infrequent and its detection calls for thorough work and monitoring. Right atrial thrombus is also an extremely rare and potentially fatal condition and both the cardiac conditions were managed successfully. The importance of learning point of care echocardiography by neonatologist can not be undermined.

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Title: Cystic hygroma of the neck – A case report

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Place of the study: Department of Paediatrics, A.C.S Medical College and Hospital, Chennai.

Abstract

Background: Cystic hygroma is a rare congenital abnormality of the lymphatic system that commonly presents as a sac-like structures mostly in the head and neck area of infants, accounting for 6% of all benign lesions of infancy and early childhood. Although the precise cause is still unknown, chromosomal abnormalities and genetic disorders have been linked to it. The cyst may be unilocular or multilocular and could be of variable size but is characteristically brilliantly transilluminant. Radiographic imaging is crucial for the diagnosis and planning of care, and surgical excision is the best form of therapy.

Case Description: A 5-month-old female child was admitted to department complaining of swelling over the lateral aspect of the neck on left side that has been presented since birth with progressively increasing in size. Local examination findings were indicative of a cystic hygroma with characteristic transillumination was seen. The diagnosis were established after a correlation of the patient's history, and clinical findings with radiological investigations. Further managed with excision of the cyst. Later a small recurrence was noted on follow up after a month and was further treated with short course on sirolimus therapy.

Learning points:

- Cystic hygromas are benign cysts that form due to malformations of the lymphatic system.
- Aspiration of the lump in combination with imaging is the gold standard for diagnosis.
- The mainstay of management is surgical, other options include sclerotherapy, drainage, radio-frequency ablation, or cauterization.

Key words: Cystic Hygroma, Lymphatic malformation, Excision

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From Genetic Diagnosis to Life-Saving Treatment : Protein C Deficiency-induced Thrombosis in Babies

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Introduction: Protein C deficiency is a rare (incidence 1 in 5lakhs live births[1]) and inherited cause of thrombophilia in neonates. Herein, we reported 2 cases of protein C deficiency during neonatal period, with good outcomes after proper treatment.

Case details :

Case 1. 4 day old male newborn was referred for refractory seizures. Baby was born full term with weight of 3.100kg without perinatal problems. All antenatal scans was normal. On day2 onwards baby had seizures, which were refractory. On evaluation coagulation profile was dearranged. MRI brain showed clot in middle cerebral artery. Genetic report showed heterozygous protein C deficiency on exon9. Baby was started on LMWH, seizures controlled discharged on single AED.

Case 2. Term baby with sudden onset of necrotic skin lesions on back and limbs from day 2 which were rapidly progressive, and had dearranged coagulation profile. Plasma protein C activity was very low (<3%), genetic report showed homozygous protein C deficiency. At 5months of life baby underwent liver transplantation. Now child was 7months old, thriving well.

Conclusion : Case 2 report confirms that liver transplantation restores the protein C level for a baby with severe protein C deficiency and prevents recurrence of thrombotic episodes. Lack of protein C concentrates supply in our country necessitates increased vigilance and referral for liver transplantation. In case 1 also we are planning for next for liver transplantation, if further recurrent thrombotic events happens.

Reference :

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Keywords : Protein C deficiency, Liver transplantation, LMWH.

P43

Case report-

Chronic Granulomatous Disease in a Neonate- unusual presentation

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Abstract

Background: Chronic Granulomatous Disease (CGD) is a rare primary immunodeficiency disorder characterized by defective NADPH oxidase complex resulting in impaired bacterial, fungal killing by phagocytes. We discuss a case of a newborn with CGD showing symptoms within the first week of life, prompting a review of literature on extremely early onset CGD.

Case Presentation: A 2600 kg male neonate was brought to us on day 44 of life with a necrotic ulcer on the hard palate with perforation, nasal septum, and deep ulcers[fig -1,2] in the perianal area. Despite IV antibiotics, the lesions persisted, leading to a provisional diagnosis of PID. The Dihydroreductase (DHR) assay revealed a neutrophil oxidation index of 3.4 fold, suggesting CGD. The baby was treated with antibiotics and antifungals, leading to gradual improvement and healing of the lesions. Surgical management is planned for the perforated palate during follow-up, and the baby was discharged on septran and Itraconazole prophylaxis.

Discussion- Our case of CGD presented at day 30 of life, earlier than usual. While hepatomegaly and abscesses are common in CGD, our case did not exhibit these characteristics. However, we observed extensive necrosis of the hard palate, nasal septum, and perianal lesions. Infections in CGD typically involve catalase-positive organisms, such as Staphylococcus aureus, Pseudomonas cepacia, and Aspergillus species. In our case, we identified infections from Klebsiella pneumoniae, Acinetobacter baumannii, and Pseudomonas aeruginosa, with galactomannan ELISA indicating Aspergillus infection.

Conclusion: It is crucial to consider CGD in the differential diagnosis of deep ulcer-like necrotic lesions in newborns.

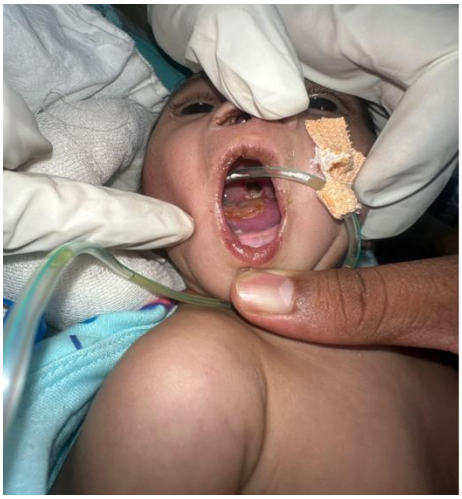

Fig 1: Palatal perforation,

Fig 2: Perianal ulcerations

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TROUBLED BREATH, HIDDEN MASS"- UNMASKING CARDIAC RHABDOMYOMA, A CLUE TO TUBEROUS SCLEROSIS

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CO-AUTHOR: Prof. Dr. Luke Ravi Chelliah MD.,

PLACE OF STUDY: Institute of child health, Egmore, Chennai.

BACKGROUND:

Tuberous sclerosis complex is an autosomal dominant multisystem disorder, caused by mutation in TSC1 and TSC2 genes. Its prevalence is 1 in 6000 to 10000 newborns. Rhabdomyomas are most common cardiac tumour often associated with Tuberous sclerosis complex.

CASE PRESENTATION:

A Male baby, third born to P3L3A1 hypothyroid mother, born via LSCS with normal perinatal transition had respiratory distress referred after intubation for impending respiratory failure. Later the baby developed seizures & supraventricular tachycardia. ECHO showed multiple rhabdomyoma attached to the ventricular wall. CSF analysis shows meningitis. Baby was treated with IV antibiotics, amiodarone infusion followed by oral propranolol. 3 weeks post admission, baby developed recurrent seizures, USG cranium & CT brain suggestive of hydrocephalus. Extra ventricular drainage followed by Left VP shunt was done. Genetic analysis showed TSC1 gene positive. Following a collaborative approach, the baby revived and remains under close follow-up.

OUTCOME:

Baby discharged with adequate weight gain,oral feeds, oral propranolol, amiodarone & oral antiepileptics. 45th and 75th day vaccination given. Parenteral counselling & advice on screening of other family members given.

DISCUSSION:

Tuberous sclerosis complex is an extremely heterogeneous disease with a wide clinical spectrum. Rhabdomyomas are tumours with favourable prognosis because they often regress spontaneously, but sometimes it may cause obstruction & arrhythmias. TSC with neurological involvement have an unfavourable prognosis. Proper diagnosis & timely management prevent catastrophic cardiovascular collapse.

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TITLE: "BROKEN SNAPPILY WITH BELATED DEPART"

AUTHORS: DR.ANBARASAN C , 2nd year MD PEADIATRICS.

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PLACE OF STUDY : INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN,EGMORE.

BACKGROUND: A Term baby with normal anomaly scan not passed meconium and urine with abdominal distension and bilateral hydrocele should arise the suspicious of a Rare entity which would require a surgical management.

CASE DETAILS: A boy baby of second born out of non consanguineous marriage with normal anomaly scan with growth scan suggestive of ?Ascites/ ?anomalous baby born via normal vaginal delivery had normal transition presented with Abdominal distension and bilateral hydrocele. Not passed meconium and urine. Xray showed Bowel loops in centre with gross free fluid.No bowel gas in pelvis. .On further ASCITIC TAPPING revealed meconium aspiration. Baby taken for emergency surgery showed Complicated meconium ileus with meconium pseudocyst and ileal perforation. Done emergency laparotomy with double barrel ileostomy .Biopsy specimen showing Gangrenous change in mucosa ganglion cells. Done closure of ileostomy after 1 month. Now at 3 month of age baby on full feeds and thriving well.

DISCUSSION: Meconium peritonitis is a result of sterile chemical peritonitis which results due to intrauterine bowel perforation and exudation of meconium into the peritoneal cavity. Meconium undergoes dystrophic calcification intrauterine, which results in the classic eggshell calcifications seen on X-ray.The estimated prevalence is around 1 in 35,000.47.

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TITLE: FISH IS IN THE NEST

AUTHORS: DR.NIVETHA S, 2nd year MD PEADIATRICS.

DR.MANGALA BHARATHI, PROFESSOR OF NEONATOLOGY

DR.DURAI ARASAN PROFESSOR OF PAEDIATRICS

PLACE OF STUDY: INSTITUTE OF OBSTRETICS AND GYNAECOLOGY,NICU EGMORE

BACKGROUND :

Rare origin site of aggressive tumor which left clueless on anomaly scan showed left eye soft tissue mass at growth scan. Leaves a large exophytic mass after birth with inconclusive findings on MRI. Biopsy confirms a Rare malignant tumour

CASE DETAILS:

30year old female with Bad obstetric history delivered a Term baby with birth weight of 2.26kg.baby did not require any resuscitation after birth. Noted to have large exophytic mass arising from left orbit involving frontal and temporal region.MRI HEAD AND NECK was suggestive of hemangiopericytoma-immature teratoma. INCISIONAL BIOPSY of mass suggestive of Primary Orbital Ewing sarcoma family of tumors. Advised genetic studies.

DISCUSSION:

Ewing sarcoma is a higly metastatic form of sarcoma that ranks as the second most prevalent primary malignant bone tumour predominantly affecting adolescents.They are characterized by non-random chromosomal translocations producing fusion genes that encode abberant transcriptional factors.The most commonly affected sites include pelvis,axial skeleton and femur.

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Congenital Acute Myeloid Leukemia: A Rare Hematological Malignancy

Abstract

Introduction: Congenital leukemia (CL) is an exceedingly uncommon disease in the newborn and is usually diagnosed at birth or within one month of life (1, 2). An estimated 175–200 case is reported in the literature (2). Incidence is repo rted to be 1 in 5 million (3). CL has a poor prognosis (1, 3). we report a newbor n that presented with clinical features of sepsis and was subsequently diagnos ed as CL.

Case presentation: We report a case of congenital acute leukemia presenting In second week of life. A term male neonate has presented with lethargy, poor sucking, right foot ecchymosis, periumbilical redness, hepatomegaly and featur es suggestive of sepsis. Septic work up was negative. Peripheral smear reveal ed hyperleukocytosis, thrombocytopenia and presence of atypical cells. Based on morphology and immunophenotyping by flow cytometry a diagnosis of acute myeloid leukemia with Cyto MPO positive was done. Karyotype sent was norm al. Baby was managed according to minimal care consent. Baby was Discharg ed against medical advice on day 9 of life and baby was succumbed to death o n day 13 of life.

Conclusion: Congenital acute leukemia is a rare disorder characterized by rapidly progressive nature of the illness, greater achievement of remission in acute myeloid leukemia as compared to acute lymphoblastic leukemia, higher relapse rate, poor prognosis and difficulty in instituting combination chemotherapy. We report a infant diagnosed with congenital acute myeloid leukemia with Cyto MPO positive based on flowcytometry. Because of very few cases being reported, there is lack of understanding about the biological nature of the disease, its progression and hence the definitive treatment.

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P48

TITLE: "THE FACE OF RISILENCE:Living with crouzon syndrome "

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DR. NARAYANAN,E,ASSISTANT PROFESSOR OF NEONATOLOGY

PLACE OF STUDY : INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN,EGMORE.

BACKGROUND: In a neonate with cranio facial dysmorphic features we suspect intrauterine infections and genetic causes. As there are so many conditions related to this presentation we present a preterm baby with cranio facial dysmorphism.

CASE DETAILS: A 23day old preterm male baby delivered by normal vaginally delivery to 27 year female, with history of perinatal asphyxia came to casualty with complaints of noisy breathing, lethargy and breathing difficulties. Child had respiratory distress and on examination had low set ears, proptosis, glossoptosis, high arched palate and noisy breathing. Torch screening was negative. FOB revealed posteriorly placed epiglottis due to glossoptosis. Echocardiogram and MRI brain normal.. Hearing assesment suggested sensorineural hearing loss. ROP screening revealed zone 2 grade III Vascularity. A genetic analysis revealed FGFR 2 mutation related disorders. Child was clinically evaluated for for the various syndromes associated with FGFR2 mutations and identified as a case of crouzon syndrome.

DISCUSSION: Crouzon syndrome is a rare genetic autosomal dominant disorder with an incidence of 1.6 in 1,00,000 people.Identification at neonatal period is difficult. The treatment for this syndrome is multidisciplinary approach as the child presenting with above mentioned features and findings.

P49

POSTER INNOVATION -INTENSIVE CARE (IC)

TITLE: **"When Chickenpox Takes a Breath"**

AUTHORS: DR.R SEENUVASAN, 2nd year MD PEADIATRICS.

PROF. DR.N.MUTHU KUMARAN, PROFESSOR OF NEONATOLOGY.

PROF.DR. LUKE RAVI CHELLIAH, PROFESSOR OF PEADIATRICS.

DR.NARAYANAN.E, ASSISTANT PROFESSOR OF NEONATOLOGY.

PLACE OF STUDY : INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN,EGMORE.

BACKGROUND: Neonatal varicella is a potentially life-threatening condition. While sepsis is a common concern in neonates presenting with fever and lethargy, clinicians should maintain a high index of suspicion for specific viral infections, particularly in the context of maternal illness. This case highlights the importance of considering multiple etiologies when faced with a critically ill neonate, as the initial presentation of varicella can be complicated by secondary bacterial infections.

CASE DETAILS: A 17-day-old female neonate, born at term to a 20-year-old primigravida mother via normal vaginal delivery, presented with multiple exanthematous rashes, fever, feeding refusal, and lethargy. Birth weight was 3280 grams with normal APGAR scores. The postnatally mother had developed varicella two days prior (15th postnatal day)to the infant's symptoms. On admission, the infant was in severe respiratory distress with impending respiratory failure and shock. Chest X-ray revealed severe right lung pneumonia with pleural effusion. Initial treatment comprised with empirical antibiotics, intravenous acyclovir, and later change to sensitive antibiotics. Pleural fluid aspiration was done showed exudative form -staphlococcus aureus growth on culture. After 28 days of NICU care, including targeted antimicrobial therapy and supportive measures, the infant was discharged in stable condition, breathing room air, and feeding well.

DISCUSSION: This case illustrates the potential severity of neonatal varicella infection, particularly when complicated by secondary bacterial pneumonia and sepsis. The case underscores several key points:

1. The incidence of parapneumonic effusion as a complication of neonatal varicella is not precisely documented, but respiratory complications are among the most severe manifestations of varicella in neonates.

Estimates suggest that pneumonia occurs in approximately 10-20% of cases of neonatal varicella, with a rarely subset of these cases developing effusion.

2.The importance of maternal vaccination and prompt recognition of neonatal infections.

3. The need for a high index of suspicion for specific viral infections in neonates, even when sepsis is the initial working diagnosis.

P50

"BEYOND HIE – UNVEILNG A RARE CA(u)SE OF FLOPPY NEWBORN"

AUTHOR:

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Dr.Jayachandran DCH , MD HOD Paediatrics

Dr.N. Rajeshwari MD,DCH Medical Superintendent

Dr.Suchithra Ravishankar DCH,DNB Consultant Paediatrician

Dr.Rosy DCH,Consultant Paediatrician

DR. KAMAKSHI MEMORIAL HOSPITAL PALLIKARANAI CHENNAI

BACKGROUND:

Perinatal asphyxia is a common cause of hypotonia in neonatal period .This case details the journey of a neonate initially suspected to have perinatal asphyxia based on the immediate postnatal history and clinical findings but later diagnosed with congenital hypomyelinating neuropathy. We aim to highlight the importance of maintaining a high index of suspicion for rare neuromuscular disorders in newborn with persistent hypotonia .

CASE DETAILS :

Baby of X , a 33 week moderate preterm male baby born by emergency LSCS to second degree consanguineous parents, who was intubated in delivery room due to poor respiratory efforts .Mother GDM on insulin , had severe polyhydramnios (AFI -42) amnioreduction done and parents were counselled to rule out congenital anomalies in the neonate after birth . Postnatally, on examination baby had facial dysmorphism, marked hypotonia , no spontaneous movements , absent DTR , repeated extubation failures, CPK and serum lactate done was mildly elevated . Hence , parents were counselled and samples sent for genetic testing . Whole exome sequencing with CNV analysis done revealed homozygous likely pathogenic variant (c.3814+1g>c) in intron 22 of CTNAP 1 gene , which is associated with 2 rare genetic diseases Lethal Congenital Contracture Syndrome 7(LCCS 7) and Congenital hypomyelinating neuropathy 3 (CHN 3).

CONCLUSION:

CNTNAP1 gene mutation is a rare cause of floppy neonate. The condition at birth mimics perinatal asphyxia . Genetic testing has a huge role in index case workup, management and also in perinatal diagnosis on subsequent pregnancies.

P 51

TITLE : A RARE CASE OF VON WILLEBRAND DISEASE TYPE 3

AUTHOR:

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PLACE OF THE STUDY : DR. KAMAKSHI MEMORIAL HOSPITAL , PALLIKARANAI , CHENNAI.

BACKGROUND:

Von willebrand disease (VWD) is the most common inherited bleeding disorder worldwide, out of which VWD type 3 is the rarest and the most severe form. It is seen with the frequency of 1 in 1 million population. When associated with factor VIII deficiency it can be life threatening, if not appropriately diagnosed and managed.

CASE DETAILS:

A late preterm, small for gestational age female neonate ,born through LSCS presented on Day 3 of life with copiuous epistaxis and gum bleeding. Baby was born out of a non consanguinous marriage to a 36 years old G2P1L1 mother, with family history of beta thalassemia intermedia and autoimmune hemolytic anemia in maternal relatives. Laboratory investigations of the newborn demonstrated normal platelet count and prolonged APTT . Further evaluation showed low von willebrand factor antigen along with low factor VIII level. Baby was diagnosed as probable Von willebrand type 3 and was transfused with cryoprecipitate . Whole exome sequencing revealed von willebrand disease type 2 / type 3 with pathogenic variant of C.2443-1G>3 . Serial APTT monitoring done,which was normalised .Child was discharged in a hemodynamically stable condition.

DISCUSSION:

This disease assumes clinical significance in view of its rare presentation in neonatal period and it is important to diagonse the disease early for timely management and for genetic counselling to prevent recurrence in further pregnancy.

P52

Abstract:

TITLE: Quality Improvement Initiative to Improve Hand Hygiene Compliance in Health Care Workers in a Level III NICU

AUTHOR NAMES :

Dr.Dhanalakshmi.R (1), Dr.Sahana Devadas (2)

1.Junior Resident- 2, Department of Paediatrics, Bangalore Medical College and Research Institute.

2.Professor and Head of the Department, Department of Paediatrics, Bangalore Medical College and Research Institute

Place of Study: Level III NICU, Department of pediatrics, VaniVilas Hospital, Bangalore Medical College and Research Institute, Bangalore.

INTRODUCTION:

In our Level III NICU, the neonatal mortality data (Jan 2023-July 2023)showed neonatal sepsis as the leading cause (68%). We identified Neonatal Sepsis as our primary Problem. Hand Hygiene Compliance was Prioritized and We planned for a Quality improvement initiative to improve Compliance to Hand Hygiene .

AIM:

To increase the Compliance to HandHygiene among Health Care workers from 44% to 90% in Level III NICU in a tertiary care Hospital over a period of 4 months .

MATERIALS AND METHODS:

A QI Team was formed involving the nurses, post graduates, Professors and other health care workers. Five moments of Hand Hygiene as recommended by WHO was observed as opportunities. The QI Team conducted series of meetings and root cause analysis was performed with Fish bone diagram. Standard WHO charts for assessing HH Compliance were used for observation and data collection. Interventions done as per PDSA cycles and the effect of Interventions was assessed at end of each PDSA cycle .Chi square test was used to measure statistical difference betweenpre and post intervention HandHygiene Compliance.

RESULTS:

In the Preintervention Phase , a total of 114 Hand Hygiene opportunities were observed. The Hand Hygiene Compliance was 44.6%. The study was done in four PDSA(Plan Do Study Act) targeting three probable causes at each phase. That includes Regular education of all Health Care workers,Providing Hand dryers, Hand rub for every crib, Display of posters, installing separate elbow operated Hand wash sink in entry and in each cabin , regular health care audits.In the last phase the Compliance improved to 76.8% .There was significant improvement in Compliance to Hand Hygiene ($p<0.0001$). The neonatal sepsis rate decreased to 26%.

CONCLUSIONS: This study signifies the usefulness of QI Methodology in creating effective improvement in neonatal care and outcome that encourages team work and sustainability.

P53

IS TRANSCUTANEOUS BILIRUBIN MEASUREMENT RELIABLE IN BABIES UNDER PHOTOTHERAPY ?

AUTHORS

Dr SANJANA SARAH BABY (JUNIOR RESIDENT)

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Dr SMCSI MEDICAL COLLEGE KARAKONAM TRIVANDRUM

INTRODUCTION

Transcutaneous bilirubinometry (TCB),is proven to be an effective safe , non invasive and convenient method for the detection of neonatal jaundice in term neonates.However for babies under phototherapy,the effectiveness of this tool is not well established even from patched sites.

AIMS AND OBJECTIVE

To estimate the agreement between transcutaneous bilirubin and serum bilirubin in term neonates under phototherapy in a tertiary care centre in South Kerala .

MATERIALS AND METHODS

This study is a cross sectional study which was conducted in the NICU of a tertiary care centre located in southern border of Kerala at Karakonam.Serum bilirubin values were measured in term babies under phototherapy as per the institutional guidelines.Those term neonates who had to be started on phototherapy within 96hours of life were enrolled into the study once they have received atleast 6 hours of phototherapy.Whenever bilirubin values were measured,both serum bilirubin and transcutaneous bilirubin were simultaneously measured .Average of unpatched transcutaneous bilirubin values of forehead and sternum were taken.

RESULTS

We collected a total of 324 samples (transcutaneous and serum bilirubin values)of term neonates under phototherapy. Sample size calculated was 284 .The relation between serum bilirubin and transcutaneous bilirubin was found to be significant (p < 0.001).There is a moderate positive correlation between the two methods(r = 0.493). TCB was found to be in agreement with Serum Bilirubin as per Bland Altman curve.A subgroup analysis of the relationship between two variables of term neonates in the first 24hours,24-48hours,48-72hours and 72-96 hours of life was also done which shows no significant difference between two variables (p value > 0.05) .

CONCLUSION

Even unpatched Transcutaneous bilirubin is found to be in agreement with serum bilirubin for term babies under phototherapy .Transcutaneous bilirubinometer can be safely used for the evaluation of bilirubin levels in term newborns even when under phototherapy.However more studies are required before we can consider replacing serum bilirubin in neonates under phototherapy.

P54

NETHERTON SYNDROME – CASE REPORT

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DNB (PAED) RESIDENT

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ABSTRACT FOR POSTER PRESENTATION

INTRODUCTION

An Ichthyosis is a heterogenous group of skin disease characterized by generalized scaling. Netherton syndrome is rare autosomal recessive syndrome with a mutation in SPINK 5 gene, which encodes a serine protease inhibitor.

CASE

A Term girl neonate with birth weight of 2.4 kg born to primigravida, nonconsanguineous married parents with no antenatal complication delivered through LSCS. Baby cried after birth and had normal transition. Baby was found to have scaling from the newborn period and treated with emollients and keratolytic agents. Baby had bilateral ASOM at 2 months of age and klebsiella positive urinary tract infection at 3 months of age. Skin biopsy was done and showed hyperkeratosis with parakeratosis suggestive of ichthyosis vulgaris. As the baby had recurrent infections, failure to thrive with Ichthyosis, syndrome of Ichthyosis with primary immunodeficiency was suspected. Genetic analysis showed SPINK 5 mutation which was suggestive of Netherton syndrome. Baby was managed with IV antibiotics and oral antihistamine.

REASON FOR PRESENTATION

Netherton syndrome is a rare severe autosomal recessive skin disorder with incidence of 1 in 200000, characterized by congenital erythroderma, a specific hair-shaft abnormality, and atopic manifestations with high IgE levels. The prognosis may be severe in neonates with life threatening cmplications and postnatal lethality is high. Skin manifestations and hair anomalies persists throughout life but the disease usually improves with age and most patients begin to thrive during the second year of life. If proper management during the 1st year of life, we can prolong the lifespan of the affected.

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ABSTRACT : FOR POSTER

TITLE: COLLOIDON PHENOTYPE WITH TRICHOTHIODYSTROPHY 1 GENOTYPE, A CASE REPORT- BEYOND THE SUPERFICIAL

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NEOCON REGISTRATION NUMBER: NEOCON24_0526

INTROUCTION Collodion baby (CB) is a rare clinical presentation of several genetic conditions, and the eventual phenotype depends on the underlying disease. The severely compromised epidermal barrier presents the greatest challenge (severe dehydration, sepsis, contractures etc) during the newborn period and advances in neonatal care have significantly improved the outcomes. CASE DETAIL We report a case of 2 day male old newborn presented with parchment like membrane all over the body with a history of parental consanguinity being present. MANAGEMENT Intensive care management included humidified incubator care, judicious fluid management, electrolyte monitoring. Natural shedding of colloidon membranes was observed at day 12-14 followed by graded parental handling of the baby establishing direct feeding. Dyselectrolytemias or acquired sepsis were successfully prevented DIAGNOSIS Next Generation Sequence revealed a likely pathogenic homozygous missense variant in exon 22 of the ERCC2 gene described as Trichothiodystrophy - 1(TTD). TTD is characterized by brittle, sulfur-deficient hair. TTD patients display a wide variety of clinical features, including cutaneous, neurologic, and growth abnormalities. Ichthyosis, intellectual/developmental disabilities, decreased fertility, abnormal characteristics at birth, ocular abnormalities, short stature, and infections have been reported. CONCLUSION With the advent of widely available Next Generation Sequencing, a historical disease like CB syndrome can reveal rare genetic etiology. This case highlights the importance of bi-pronged approach of – acute stabilisation care as well as long term detailed management which was possible due to timely genetic diagnosis. Parental genetic counselling was planned for future pregnancies due to possibility of recurrence.

P-56

Abstract for "Poster Only":

The Essential Role of Early Genetic Evaluation in the Diagnosis and Management of Prader-Willi Syndrome: A Case Report.

Presenter:

Dr.Arjun M (NNF-TELG/L-9451) - Resident Department of Neonatology, Sri Ramachandra Medical College,

Guide:

1.**Dr.Umamaheswari B** -Head of Department, Professor, Neonatology Department, Sri Ramachandra Medical College and Research Institute, Chennai,

2.**Dr. Prakash A** -Professor, Neonatology Department, Sri Ramachandra Medical College and Research Institute, Chennai,

3.**Dr.Deepak T**- Assistant Professor, Department of Neonatology, Sri Ramachandra Medical College and Research Institute, Chennai.

Sub-Speciality Category: Genetics (GENE)

Background: Prader-Willi syndrome (PWS) is a rare genetic disorder characterized by various physical, cognitive, and behavioural abnormalities. This case report describes the diagnosis of PWS in a male neonate born to a 32-year-old primigravida with hypothyroidism, highlighting the complex inheritance mechanisms and diagnostic approach.

Case Report: The neonate, born at term following an uneventful pregnancy, presented with clinical indicators suggestive of central hypotonia, including an incomplete Moro's reflex ("pithed frog position"). Additional dysmorphic features included retrognathia, hyperflexible fingers, and undescended testes.

Diagnosis: Initial investigations were conducted to exclude alternative causes of central hypotonia. Genetic testing using methylation-specific PCR revealed complete methylation in the SNRPN and MAGEL2 genes, indicative of uniparental disomy, confirming the diagnosis of PWS. MS-MLPA analysis did not identify deletions, duplications, or imprinting defects. Hence further evaluation is required to rule out Iso/hetero type of UPD or Imprinting disorder due to epimutation. This demands Oligo SNP array technique which will help in predicting sibling risk.

Management: Supportive care with regular neurodevelopmental follow up schedule and Role of Endocrinologists is crucial for prompt management including Growth Hormone (GH) therapy, obesity and hypogonadism. A multidisciplinary approach was adopted in our case, initiating early management with GH therapy commencing at 2 months of age, alongside routine neurodevelopmental monitoring.

Conclusion: This case underscores the significance of genetic evaluation, including MS-MLPA, in diagnosis of PWS. Understanding the mechanism of inheritance helps in parental counselling and predicting future recurrence. Early identification through precise genetic testing facilitates timely intervention including GH therapy, nutritional management, and behavioral interventions.

P57

SUPRAUMBLICAL PERITONEAL DIALYSIS IN NEONATES – A NOVEL APPROACH

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GOURI R. PASSI, Head of Paediatric department, CHRC Indore

INTRODUCTION:

Acute kidney injury in neonates is multifactorial and neonates remain vulnerable due to various risk factors. There are several types of catheters and insertion techniques. Most commonly used sites for placements are lower abdominal quadrant or in the midline as infraumbilical approach. Supraumbilical approach for peritoneal dialysis has not been described in neonates. We aimed to evaluate the safety, efficacy and clinical outcomes of supraumbilical peritoneal dialysis in neonates at our centre.

METHODS: This is a retrospective study done in a tertiary care NICU during 2021-2024. We included 6 neonates requiring supraumbilical peritoneal dialysis for various indications. 8 or 10 Fr TROCAR cannula (Vygon) or 8Fr soft pigtail catheter (Bluemeen) were used for placement during peritoneal dialysis.

RESULT

Mean body weight was 1783 ± 366.6 grams, and the mean gestational age was 34.3 ± 3.2 weeks.5 male and 1 female were taken for study. Mean age at the moment of starting peritoneal drainage was 1.6 ± 0.2 days. Mean duration of PD was 114.6 ±60.4 hours Indications for peritoneal dialysis were acute kidney injury grade III (50%), acute kidney injury grade with chronic kidney disease (16%), 33.33% had hyperammonaemia. Supraumbilical peritoneal dialysis was found to be safe and effective in doing peritoneal dialysis with less chances of dialysate leakage and drainage related problems. One patient had omental prolapse while inserting the PD cannula which was managed supportively, and no other major complications were noted during supraumbilical peritoneal dialysis. Mortality was 33.3% (2/6). 2 neonates died due to DIC with multiorgan dysfunction with acute kidney injury grade III and sepsis.

CONCLUSION: Supraumbilical peritoneal dialysis placement is feasible, safe and effective method for early initiation of dialysis therapy and is a promising technique to optimise catheter placement and reduce complication associated with traditional infra umbilical placement.

P58

Title: A case report on fetal cardiac rhabdomyoma

Dr.Devaram Sowmya, Dr.Umamaheswari B, Dr Prakash A, Dr Rajarajan

Introduction: Rhabdomyoma is most common benign paediatric cardiac tumour which is benign. It characteristically develop in utero and is associated with tuberous sclerosis in 80-90% of cases

Case report: A very preterm girl baby born to a non consanguineous couple. Maternal age was 24 years, spontaneously conceived . 1st trimester screening showed high risk for Downs syndrome ,hence amniocentesis was done and Chromosomal microarray was done which was normal. Rapid exome sequencing done showed – mutation in (ZNF292, Exon 8, heterozygous, autosomal dominant Variant of uncertain significance (VOUS). Her target scan and subsequent fetal MRI done at 20weeks revealed blake pouch cyst. Growth scan at 28weeks showed fetal cardiac rhabdomyoma hence tuberous sclerosis gene coverage was checked and was found to be normal. Baby was born via emergency LSCS in view of severe oligohydramnios and was stable postnatally. Postnatal evaluation showed multiple Rhabdomyomas in ECHO,ECG was normal , NSG done on day 3 showed suspicious area of irregularity and hyperechoic lesions subsequent NSG done in 3rd week showed features suggestive of cortical tubers . Wood's lamp examination was done showed no ash leaf macules.Serial ECHO were done showed persistence of rhabdomyoma. MRI showed multiple subependymal nodules along bilateral ventricles. MLPA was done as large deletions duplications can occur in 0.6-6% of cases and was normal.

Dignosis: Fetal cardiac rhabdomyoma with strong suspicion of tuberous sclerosis possibly due to somatic mutation.

P59

Megacystis with microcolon with intestinal hypoperistalsis syndrome: An obstruction without an obstruction

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BACKGROUND: Megacystis-microcolon-intestinal hypoperistalsis syndrome is characterized by megacystis -bladder distention in the absence of mechanical obstruction, microcolon, and intestinal dysmotility. It is associated with significant morbidity and mortality.

CASE REPORT: We report a case of a female baby, born to 28-year-old gravida two of a non-consanguineous marriage. Prenatal ultrasound at 22weeks of gestation revealed fetal megacystis. Repeat ultrasound at 24weeks showed bilateral renal pelvicalyceal ectasis with mild dilatation of ureter, megacystis with normal amniotic fluid volume. Emergency LSCS was done at 31weeks with birth weight of 1963gm and Apgar score of 5 and 8 at 1min and 5min, respectively. Baby required PPV for 1minute followed by CPAP for respiratory distress secondary to distended abdomen. Baby developed feed intolerance on day of life (DOL-2). Contrast enema revealed intestinal perforation. Features of early onset sepsis was noted on DOL-3 requiring antibiotics and inotrope support. Emergency laparotomy on DOL-z4 revealed microcolon with dilated jejunum and ileum, requiring ileostomy. Biopsy revealed presence of ganglion cells in myenteric plexus. TPN dependant with intolerant to enteral nutrition was noted. Samples were sent for genetic analysis and reports awaited.

CONCLUSION: Prenatal suspicion is warranted as prognosis is generally poor and treatment is mostly supportive. Bowel transplantation remains the only viable treatment to restore bowel motility.

Keywords: Megacystis, Feed intolerance, ileostomy

P60

TITLE: A Quality improvement study to reduce central line-associated bloodstream infections in a neonatal intensive care unit in a tertiary care hospital in Karamsad Gujarat.

Bhushan Korde, Dipen Patel, Somashekhar Nimbalkar, Ajay Phatak.

Introduction:

Sick neonates in the neonatal intensive care unit (NICU) frequently need insertion of central lines placing them at high risk of contracting a CLABSI. Infections increase the risk of morbidity, mortality, medical costs, and hospital length of stay in the neonatal intensive care unit (NICU).

Aims and Objectives:

Improve adherence to the CLABSI maintenance Care bundle checklist from 70 % to 100% and reduce CLABSI rate from ~ 10 per 1000 central line days to < 5 per 1000 central line days in the NICU.

Material and Methods:

This quality improvement study was conducted at the neonatal intensive care of a tertiary care teaching institute over a period of 13 months using the Plan-Do-Study-Act (PDSA) principle. The monitoring unit has a 24×7 availability of MD pediatric, DM Neonatology residents and staff nurses. All the newborns requiring central line placement were included in the study. The analysis was performed using STATA (14.2).

Results:

Adherence to the CLABSI maintenance care bundles checklist improved significantly from 65 % to 100% in PDSA cycle 2 which stabilized to 99% in the sustenance phase. The Mean (SD) CLABSI maintenance care bundles checklist improved significantly in all PDSA cycles and remained stable during sustenance ($P<0.001$). CLABSI rate of 13.24 per 1000 central line days at the Baseline improved to 0 in PDSA cycle 2 and remained under control (4.85) in the sustenance phase.

Conclusion:

The current study resulted in increased CLABSI care bundle adherence and a reduction in CLABSI rate per 1000 central line days.

P61

Successful Peritoneal Dialysis in a micro premie

Dr.V.Rajeswari

Prashanth Hospital, Chennai

Male baby, delivered at 26 weeks by emergency LSCS, birth weight 746 grams, cried at birth, had respiratory distress syndrome, managed with surfactant and mechanical ventilation, developed right pneumothorax on day 3, managed with intercostal drainage, IV fluids given along with empirical IV anti-biotics (Meropenam / Amikacin).

In view of pneumothorax, ventilator associated pneumonia and elevated septic markers antibiotics escalated to IV Colistin and Vancomycin on day 3. Baby also had coagulopathy which was managed with fresh plasma and packed cells, had PDA which was treated with IV Paracetamol.

On day 4 ,there was increase in blood urea, serum Creatinine and Serum potassium but baby was non oliguric. Injection Amikacin was stopped. Subsequently baby became anuric with further worsening of renal parameters. Antibiotics were adjusted accordingly. Hyperkalemia was managed with supportive measures.

In view of Anuria, lasix infusion was started but as there was no response peritoneal dialysis was done on day 6 of life. Urine output started improving within 3 hours of PD and improved to more than 2 ml/kg/hour over 12 hours. PD had to be stopped after 20 hours due to catheter malfunction. Renal parameters gradually improved over 2 weeks.

In our baby the cause of AKI was multi factorial namely Sepsis, Ischemic ATN and drugs. Peritoneal dialysis is a challenge in small neonates as it is associated with high mortality and there is always a dilemma of aggressive management in this micro premie with uncertain outcome but PD was successful, and baby recovered from AKI .

P62

POSTER PRESENTATION

Rare case of tuberous Sclerosis complex – A Case Report.

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Neonatal Intensive Care Unit, Department of Pediatrics, Coimbatore Medical College Hospital.

INTRODUCTION:

Tuberous Sclerosis complex is an inherited neurocutaneous disorder characterized by pleomorphic features involving many organ systems.

CASE REPORT:

34 weeks moderate preterm /VLBW/IUGR baby born to tuberous sclerosis mother and chronic hypertension on treatment; delivered by emergency Lscs due to severe Oligohydramnios and IUGR;Doppler Showing: Absent flow, an alive baby with birth weight 1.170 kg, cried at birth, admitted in view of respiratory distress, preterm,VLBW care. Anomaly Scan Showing : Rhabdomyoma on Right Ventricle of Size (1.2 x 0.5 cm)

On day 3 of life : Asymptomatic hypoglycemia corrected with EBM feeds. Screening ECHO done : Right Ventricular mass attached to Inter – Ventricular septum of

Size (1.1 x 0.7 cm) Rhabdomyoma

Usg abdomen & KUB : Multi – Septated Cystic lesion – (Right Kidney)

Usg Cranium : Few tiny Sub – ependymal nodules in body of Right lateral ventricle

P / o : Sub – ependymal tubers

Ophthal Screening : Normal

Neuromedicine opinion: Obtained, Suggested to watch for Seizures

DISCUSSION:

Tuberous sclerosis Complex is a Multi – System disease of Autosomal dominant inheritance with prevalence of lin 6,000 – 10,000 newborns.

TSC – 1 gene codes for protein : Hamartin

TSC – 2 gene codes for tuberin ; tumor suppressor genes – regulating

Protein Synthesis, cell size loss of either tuberin (or) Hamartin protein results in the formation of numerous benign tumors (hamartomas)

The disease affects many organ Systems other than skin, Brain including heart, kidney, eyes, lungs, Bone

Hallmark feature : CNS involvement; MRI – Best to identify cortical tubers cortical tubers MTOR inhibitor – Everolimus – FDA approved

Follow up : MRI Brain and Echo (if rhabdomyoma) recommended.

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POSTER PRESENTATION

MULTIFOCAL INFANTILE HEMANGIOMA – A Case Report

Dr Kalaivani N Dr Senthilkumar P Dr Sathyan VK

Dr Sasikumar BR Dr Kumar

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CASE REPORT

A term female baby delivered to Primi mother by normal vaginal delivery admitted on day 12 in view of multiple erythematous papular lesions (present since birth) which are progressively increased in size for past 1wk. Birth weight –2.8 kg. AN Scan –normal. On examination, multiple bright red protruding lesions all over the body, the largest of size 5*3cm over gluteal region. Superficial and deep lesions of variable size over face and extremities. Per abdomen – appears distended.USG abdomen shows multiple hypoechoic lesions in both lobes of liver . USG cranium / ECHO –normal.Diagnosed as multifocal infantile hemangioma and started on oral propranolol which shows dramatic response in 1 1 week & successfully discharged.

DISCUSSION

Infantile hemangiomas are proliferative beningn vascular tumors of vascular endothelium. Presentation at birth or 1st/2 nd week of life. Hemangiomas >5 cm should evaluate for hapatic / CNS involvement. DIagnosis clinically and skin biopsy . GLUT 1 positive tumors carry good prognosis.

TREATMENT

Spontaneous resolution by 5 years.

Ulcerated hemangiomas / vision or life threatening- oral Propranolol

References :

Matsuura T, Kadono T,Soma Y, et al.Successful propranolol treatment for diffuse neonatal hemangiomatosis.J

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P64

COR VERRENTIA- A CASE OF INFECTIVE ENDOCARDITIS

Dr. Madhumitha S Dr. Senthil Kumar Dr.Sathyan V K Dr.Sasikumar Dr.Kumar

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Case report:

A 32 week preterm very low birth weight boy baby born to a 28 years primi via emergency caesarean section in view of eclampsia who didn't cried at birth required 2 doses of surfactant. UVC was placed. Child was on ventilator for 3 days and for pneumonia and sepsis child received multiple antibiotics and blood products. Echo and USG cranium screening done on was normal. On day of life 30, baby had new onset murmur and tachycardia. Blood culture obtained showed MRSA. Echo done showed a mass of size 1.3cm*0.7cm attached to inter-atrial septum. Diagnosed to be infective endocarditis and baby was started on Vancomycin, Meropenem and Amphotericin B. After 3 weeks antibiotic course, mass size was reduced to 0.46*0.7cm confirms that it is responding to antibiotics and an review echo after 6 weeks of antibiotics showed complete clearance mass.

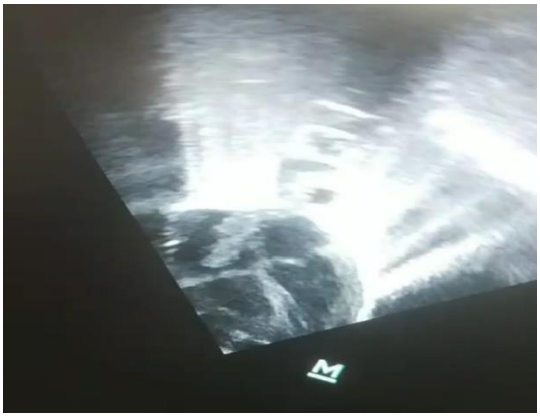
Discussion:

Neonatal infective endocarditis is rare and usually a fatal disease. Risk factors are invasive therapies like umbilical and other central line placements, total parenteral nutrition and septicaemia. Diagnosis is usually by echocardiography and blood culture.

Treatment:

Sensitive or empirical antibiotics for 4-6 weeks.

Indications of surgery:progressive heart failure, valvular obstruction, perivalvular extension of infection, fungal endocarditis, persistent bacteraemia despite appropriate antibiotic therapy and embolic events.



02/07/2024 12:40:09 PM AP 97% MI 1.0 TIS 0.4
P7-3 Neonatal CAR
148/170
1 PFO Diam 0.73 cm
2 PFO Diam 0.46 cm

P65

ATYPICAL OSTEOMYELITIS OF NEONATE – A rare case report

Dr.Sakthipriya A R , Dr.Senthilkumar P, Dr.Sathyan V K, Dr.Sasikumar B R,Dr.Kumar

Neonatal Intensive Care Unit(NICU),Department of Paediatrics and Neonatology,Coimbatore Medical college

CASE REPORT :

A 33 weeks moderate preterm /AGA /DCDA Twin 1 , male baby delivered by Emergency LSCS (oligohydramnios),birth weight -2.3kg, cried after birth ,admitted in NICU for preterm care .At 72 hours of life baby showed clinical features of sepsis after doing sepsis screen started on first line IV antibiotics.On DOL -5 , baby developed 2 localized swellings with erythema in the body and lower end of sternum.

USG :ill defined hyper echoic collection suggestive of abscess.MRI :overlapping, focal lytic lesion with hyper intense signal involving second and third sternebrae,suggestive of OSTEOMYELITIS of sternum

.I & D done frank pus was aspirated, sent for culture and sensitivity,initially started on empirical antibiotic.Culture sensitivity: MRSA,Sensitive to meropenem ,vancomycin, antibiotics upgraded.

DISCUSSION:

Osteomyelitis is a rare disease in newborn,resulting from hematogenous seeding in the setting of bacteremia or direct extension from skin source of infection.Most common organisms ae staphylococcus aureus, group B streptococcus ,Neisseria gonorrhoeae

common sites: femur,humerus,radius,tibia ,maxilla.

This baby had atypical presentation involving sternum clinically diagnosed by local swelling with erythema and decreased movement of affected part, confirmed by MRI -features of osteomyelitis, aspiration of pus -MRSA treated with IV antibiotics for 4 weeks.

Osteomyelitis if identified early and specific treatment started at earliest would prevent serious complications like significant disability from joint or growth plate damage.

P66

TITLE :A Case report of OSTEOGENESIS IMPERFECTA in a newborn

AUTHORS :Dr Janani A G ,Dr N Kumar, Dr P Senthilkumar,Dr V K Sathyan

PLACE OF STUDY:Special Newborn Care Unit, Department of Pediatrics and Neonatalogy, Coimbatore Medical College Hospital

INTRODUCTION

Multiple bone fractures in newborn can be associated with trauma as well as metabolic bone disease.Identification of the underlying disease is crucial for treatment .It is a disorder of bone fragility.

CASE REPORT

A female newborn ,delivered by labor naturale at 36 weeks gestation has been referred from a PHC as anomalous baby.Baby was born of non consanguineous marriage to a 21 year old mother who was unbooked & unimmunised during pregnancy.Baby was found to be SGA/LBW- 1.8 kg and had no respiratory distress at birth,baby had incessant cry during handling.On head to foot examination ,baby had relative macrocephaly,wide opened anterior fontanelle,flat occiput,frontal bossing,triangular facies,bowing of both lower limbs,short stature,tenderness & swelling over middle of right thigh.No family history in all three generations family.Xray shows short long bones with Right femur fracture with callus formation.Ophthalmologic examination shows white sclera.Cardiovascular Evaluation shows small ASD with small PDA.Neurosonogram shows normal study with normal Calcium, phosphorus,ALP .Molecular genetic study report awaited.Baby has been provisionally diagnosed as OSTEOGENESIS IMPERFECTA (most likely SILLENCE TYPE 3 based on clinical and radiological criteria).Orthopaedic management of fracture with splint application over the Right lower limb was done

DISCUSSION

It is a disorder of bone fragility with severity range from multiple fractures in utero ,perinatal lethality to near normal adult stature.It is due to the defects in genes involved in Type 1 collagen. Treatment involves a multidisciplinary approach - orthopaedic management of fractures and deformity correction,active physical rehabilitation There is no cure for OI

TITLE: A Case report of DIAPHRAMATIC PALSY in a newborn

AUTHORS:Dr Janani A G,Dr N Kumar,Dr P Senthilkumar, Dr V K Sathyan

PLACE OF STUDY: Special Newborn Care Unit, Department of Pediatrics &Neonatalogy, Coimbatore Medical College Hospital

INTRODUCTION: Diaphragmatic palsy in newborn is related to brachial plexus injury.It can cause respiratory failure requiring prolonged mechanical ventilation and subsequent extubation failure

CASE REPORT: A 22 day old male neonate ,born by normal vaginal delivery to a obese primi mother at 38 weeks term gestation with birth weight of 3.2 kg ,referred from a district hospital in view of persisting respiratory distress.There was history of difficult 3rd stage of labour,traction given to deliver the baby but no instrumental delivery.At birth,baby had respiratory distress requiring intubation & mechanical ventilation.Baby had persistent respiratory distress requiring continuous oxygen support.Physical examination and chest xray and M mode ultrasonography of Diaphragm shows features suggestive of Right sided diaphramatic palsy with right erb's palsy.Early physiotherapy has been initiated and Pediatric surgery opinion sought suggested Right diaphramatic plication.With physiotherapy,baby relatively improved and planned for surgical plication of diaphragm.

CONCLUSION:Diaphragmatic paralysis occurs in 5% of the Brachial plexus injury cases.Spontaneous recovery of diaphragmatic function occurs in most cases.Surgical plication is indicated in refractory cases

P67

POSTER ONLY

NON KETOTIC HYPERGLYCINEMIA- A RARE CASE REPORT

Dr Dhiya P Reji

Dr B R SASIKUMAR - HOD ,Department of Pediatrics

Dr N KUMAR- CHIEF SNCU CMCH

ASSISTANT PROFESSOR:

Dr P Senthilkumar , Dr V K Sathyan

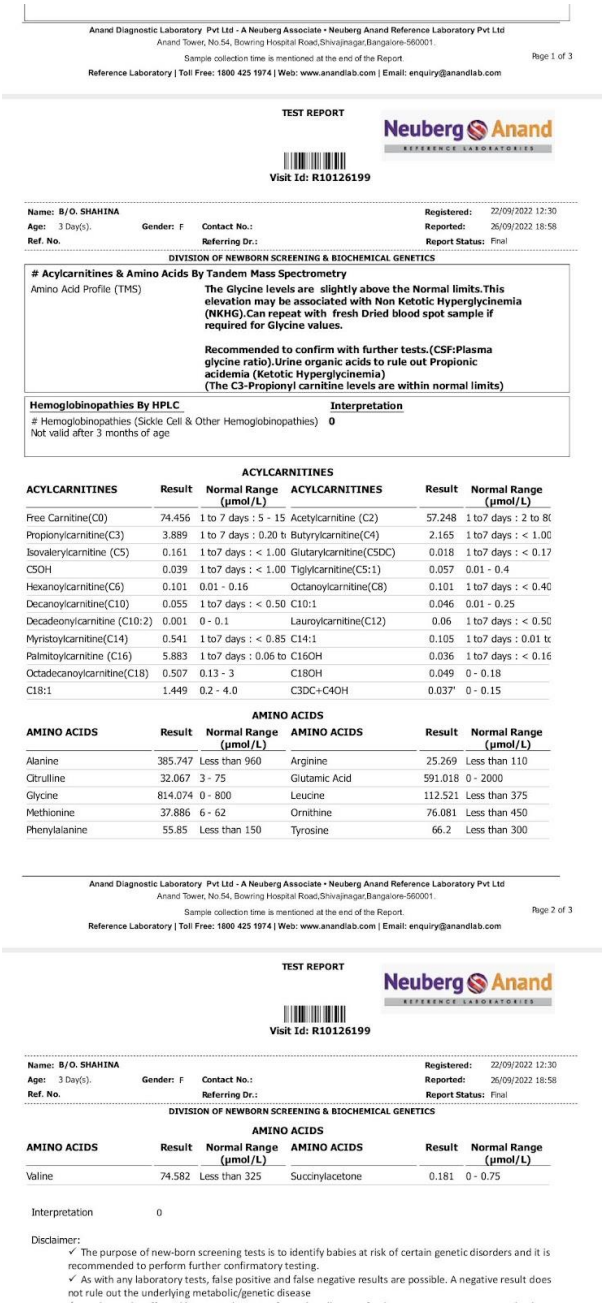
INTRODUCTION:

Non ketotic hyperglycinemia is a rare genetic disease secondary to inborn error of glycine metabolism. Due to mutation in glycine cleavage enzyme system ,baby is unable to breakdown glycine resulting in glycine accumulation primarily within the spinal cord and brain.

CASE REPORT

Born to 32 years old G3P2L2 by non consanguinous marriage with no known comorbidities and antenatal scan normal full term normal vaginal delivery.Baby cried at birth ,with birth weight 2.8 kg and breast fed within 1 hr.At 22 hrs of life baby was lethargic with multiple episodes of seizure ,apneic episodes needing mechanical ventilation.Baby was found to be lethargic , hypotonic, Anterior fontanelle - lax, pupils reacting to light equally with no abnormalities in other system noted.Sepsis screen was negative ,hypoglycemia requiring glucose infusion ,MRI brain - Diffusion restriction noted in bilateral posterior limb of internal capsule, ventral midbrain. ,pons,medulla,EEG - Fixed epileptiform abnormalities over left occipital region.

TMS- Glycine levels elevated



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Sample collection time is mentioned at the end of the Report.
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TEST REPORT

Neuberg Anand REFERENCE LABORATORIES

Visit Id: R10126199

Name: B/O. SHAHINA
Age: 3 Day(s). Gender: F Contact No.:
Ref. No. Referring Dr.:
Registered: 22/09/2022 12:30
Reported: 26/09/2022 18:58
Report Status: Final

DIVISION OF NEWBORN SCREENING & BIOCHEMICAL GENETICS

Acylcarnitines & Amino Acids By Tandem Mass Spectrometry

Amino Acid Profile (TMS)

The Glycine levels are slightly above the Normal limits.This elevation may be associated with Non Ketotic Hyperglycinemia (NKHG).Can repeat with fresh Dried blood spot sample if required for Glycine values.

Recommended to confirm with further tests.(CSF:Plasma glycine ratio).Urine organic acids to rule out Propionic acidemia (Ketotic Hyperglycinemia)
(The C3-Propionyl carnitine levels are within normal limits)

Hemoglobinopathies By HPLC	Interpretation
# Hemoglobinopathies (Sickle Cell & Other Hemoglobinopathies) Not valid after 3 months of age	0

ACYLCARNITINES

ACYLCARNITINES	Result	Normal Range (µmol/L)	ACYLCARNITINES	Result	Normal Range (µmol/L)
Free Carnitine(C0)	74.456	1 to 7 days : 5 - 15	Acetylcarnitine (C2)	57.248	1 to7 days : 2 to 8(
Propionylcarnitine(C3)	3.889	1 to 7 days : 0.20 t	Butyrylcarnitine(C4)	2.165	1 to7 days : < 1.00
Isovalerylcarnitine (C5)	0.161	1 to7 days : < 1.00	Glutarylcarnitine(C5DC)	0.018	1 to7 days : < 0.17
C5OH	0.039	1 to7 days : < 1.00	Tiglylcarnitine(C5:1)	0.057	0.01 - 0.4
Hexanoylcarnitine(C6)	0.101	0.01 - 0.16	Octanoylcarnitine(C8)	0.101	1 to7 days : < 0.40
Decanoylcarnitine(C10)	0.055	1 to7 days : < 0.50	C10:1	0.046	0.01 - 0.25
Decadeonylcarnitine (C10:2)	0.001	0 - 0.1	Lauroylcarnitine(C12)	0.06	1 to7 days : < 0.50
Myristoylcarnitine(C14)	0.541	1 to7 days : < 0.85	C14:1	0.105	1 to7 days : 0.01 to
Palmitoylcarnitine (C16)	5.883	1 to7 days : 0.06 to	C16OH	0.036	1 to7 days : < 0.16
Octadecanoylcarnitine(C18)	0.507	0.13 - 3	C18OH	0.049	0 - 0.18
C18:1	1.449	0.2 - 4.0	C3DC+C4OH	0.037'	0 - 0.15

AMINO ACIDS

AMINO ACIDS	Result	Normal Range (µmol/L)	AMINO ACIDS	Result	Normal Range (µmol/L)
Alanine	385.747	Less than 960	Arginine	25.269	Less than 110
Citrulline	32.067	3 - 75	Glutamic Acid	591.018	0 - 2000
Glycine	814.074	0 - 800	Leucine	112.521	Less than 375
Methionine	37.886	6 - 62	Ornithine	76.081	Less than 450
Phenylalanine	55.85	Less than 150	Tyrosine	66.2	Less than 300

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TEST REPORT

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Ref. No. Referring Dr.:
Registered: 22/09/2022 12:30
Reported: 26/09/2022 18:58
Report Status: Final

DIVISION OF NEWBORN SCREENING & BIOCHEMICAL GENETICS

AMINO ACIDS

AMINO ACIDS	Result	Normal Range (µmol/L)	AMINO ACIDS	Result	Normal Range (µmol/L)
Valine	74.582	Less than 325	Succinylacetone	0.181	0 - 0.75

Interpretation 0

Disclaimer:
- ✓ The purpose of new-born screening tests is to identify babies at risk of certain genetic disorders and it is recommended to perform further confirmatory testing.
- ✓ As with any laboratory tests, false positive and false negative results are possible. A negative result does not rule out the underlying metabolic/genetic disease

MANAGEMENT:

Syp . Levetiracetam,T Folinic acid, T Pyridoxine,Dextromethorphan syrup, Sodium benzoate

P68

ABSTRACT

DISORDER OF SEXUAL DEVELOPMENT- DENYS DRASH SYNDROME

Dr. Smith.R

HEAD OF THE DEPARTMENT- *Dr. Sasikumar*

CHIEF SNCU CMCH- *Dr. Kumar*

ASSISTANT PROFESSOR- *Dr. P. Senthil Kumar, Dr. V. K. Sathyan*

NEONATAL INTENSIVE CARE UNIT, CMCH, COIMBATORE.

INTRODUCTION

Denys Drash syndrome is an autosomal dominant disorder of sexual development as a result of mutations in WT1 gene on chromosome band 11p13. It presents with ambiguous genitalia [mostly XY], Bilateral Wilms tumour, Focal or diffuse glomerulosclerosis and End stage renal disease occurs by age 3. Baby presents with early onset nephrotic syndrome within 1 year of age and progressive renal insufficiency.

CASE REPORT

At birth the baby was small for gestational age and had respiratory distress which settled with oxygen. On further evaluation baby had atypical genitalia and other system examination was normal. Baby was born to a primi with no history of maternal drug exposure, Congenital adrenal hyperplasia, Placental insufficiency, prenatal abnormalities or genetic syndromes in family members. Examination of genitalia revealed micropenis, poorly developed scrotum, both testis non palpable in inguino scrotal region and anogenital ratio of 0.4. Investigations showing normal levels of 17 hydroxy progesterone, baseline electrolytes, complete blood counts and renal function test. USG abdomen and pelvis showing unvisualised uterus and ovaries, ovoid shaped testis like structures seen medial to external iliac vessels suggestive of bilateral undescended testis, adrenals and kidneys were normal. Karyotyping revealed 46XY [male]. Whole exome sequencing done using FISH technique provided a diagnosis of DENYS DRASH SYNDROME of WT1 gene Further Plan and follow up includes periodic examination of the baby, serial ultrasonogram to monitor for the renal status and risk of Wilms tumour , Anti mullerian hormone, testosterone and dihydrotestosterone levels. Diagnostic laparoscopy is planned at 1year of of age under Paediatric surgery.

P 69

High Concentration Glucose Through UVC and Neonatal Cardiac Thrombus is it merely a coincidence or an association?

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SAT Hospital, Thiruvananthapuram, Kerala

NNF registration number: TN/L-10142

Co- Author's: Dr. Radhika S, Dr. Lakshmi, Dr. Hari Krishnan, Dr. Sobha kumar, Dr. Aswathy Rahul.

ABSTRACT

Background:

Neonates are at risk for developing thrombosis because of the unique characteristics of their coagulation and fibrinolysis system as well as triggers such as indwelling catheters. Right atrial thrombus is usually associated with central venous catheter. Studies have reported 90% of all thromboembolic events in neonates are due to central venous catheter. It should be highly suspected in cases of unexplained tachycardia in neonates with central line catheter in situ because it can compromise the cardiac function or it leads to pulmonary embolism and mortality of the newborn. However thrombolytic therapy offers resolution of thrombus but it can lead to detrimental complications. This case series describes the clinical course, thrombolytic options and outcome of four neonates presented with atrial thrombus with central venous catheter that will guide us to initiate appropriate thrombolytic treatment to various atrial thrombus.

Case description:

Case	1	2	3	4
Birth weight	2.96 kg	3.43 kg	1.7 kg	2.65 kg
GA	37w+2	38w+2	39w+2	38w+4
Day of life	1	1	1	1
Maternal comorbidities	Nil	Over DM	Nil	GDM
Diagnosis at admission	Hyperinsulinemic hypoglycemia	Hyperinsulinemic hypoglycemia with PPHN	Hyperinsulinemic hypoglycemia	Hyperinsulinemic hypoglycemia

Insulin levels	44µIU/ml	15µIU/ml	16µIU/ml	19µIU/ml
UVC duration	21 days	21 days	10 days	11 days
Thrombus detected	Day 15	Day 5	Day 7	Day 5
Event	Tachycardia	Tachycardia	Tachycardia	Cholestasis
ECHO findings	Large thrombus extending from IVC to RA (18 x 13mm) extending in to RV inflow touching the tricuspid valve	Thrombus in IVC – RA junction of 1 x 1cm	Thrombus of 7x6 mm in right atrium	Echohenic mass measuring 10 x6 mm within IVC-RA junction attached to IAS and another echogenic mass of 6 x5mm attached to PA wall
Anti-coagulation	Recombinant tissue plasminogen activator – Tenecteplase	Unfractioned heparin	Low molecular weight heparin-Enoxaparin	Low molecular weight heparin – Enoxaparin
Complications	Pulmonary embolism	B/L Grade 2 bleed (Rt>Lt)	Nil	Nil

Conclusion:

Right atrial thrombus is a serious medical emergency which can be prevented by avoiding prolonged usage of central line catheter (<7 days) especially in hyperinsulinemic babies requiring prolonged hyperosmolar fluids.

P 70

A CASE REPORT OF PARECHOVIRUS MENINGITIS IN A PRETERM BABY

DR.RAGHURAM R , DR.UMAMAHESHWARI B, DR.PRAKASH A

INTRODUCTION:

Human Parechovirus (HPeV) is a common cause of infections occurring especially during the first years of life, particularly in neonates.The clinical manifestations range from a pauci-symptomatic infection to a sepsis-like or central nervous system involvement that requires intensive care.

CASE REPORT:

We report a case of a Preterm baby boy born at 32weeks+5 days of gestation who presented on day 9 of life with Irritable cry, reduced activity and poor feeding. Later baby also had multiple episodes of seizure activity in the form of cyclical movements of all limbs.

In suspicion of LONS, septic screen done was negative. CSF analysis and GALAK workup done was also normal. EEG done showed Epileptiform activity. CSF Biofire panel was normal. MRI brain done showed Bilateral symmetrical diffusion restriction noted in Bilateral cerebral white matter, thalamus and in Corpus callosum along with brain stem involvement suggestive of Parechovirus meningitis.

MANAGEMENT:

Baby was managed symptomatically, initiated started on antibiotics and loaded with multiple antiepileptics. Antibiotics were stopped after Blood culture was sterile and diagnosis of Parechovirus meningitis was confirmed, AED's were also stopped after 72 hours. Baby's activity improved gradually over a period of 3 days, was seizure free, tolerated direct breast feeds well, with adequate weight gain and discharged at day 20 of life. Baby was advised to be in follow up at High risk and Neurodevelopmental clinic.

CONCLUSION:

Several reports describe favourable short-term neurodevelopmental outcomes at discharge after Parechovirus infection,however a specific follow up and the awareness on the risk of sequelae is essential.

***P* 71**

A Rare case of Neonatal Encephalitis due to Chikungunya

Presenter - DR HARI PRASATH C,POST GRADUATE
Guide - DR INDIRA P,PROFESSOR & HOD
GOVT.SIDDHARTHA MEDICAL COLLEGE,VIJAYAWADA

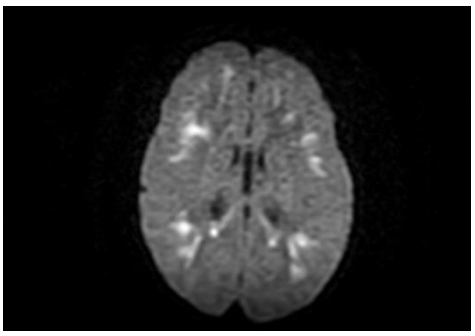
INTRODUCTION: Chikungunya virus is an RNA virus of the genus Alphavirus of Togaviridae family. Chikungunya is caused by arthropod-borne alphavirus and is rare in neonatal period.Neonates with the disease can present with irritability, fever, poor feeding, seizures, bleeding, hyperalgesia, apnea, diffuse limb edema, multiorgan failure, and various skin manifestations.Severe illnesses can also present with encephalopathy, possibly because of meningoencephalitis and cerebral hemorrhages.The pooled risk of neonatal death is 0.6% among maternal infections and 2.8% among neonatal infections.

CLINICAL HISTORY:A 15-day-old female baby born to a 21-year-old G2P1L1 mother at 40 weeks gestation via normal delivery presented with complaints of fever, involuntary movements of all 4 limbs, decreased activity for 4 days.At admission, baby was febrile (temp. 100.1F/37.8°C), irritable, and and generalised pigmentation all over the body. The palms and soles exhibited diffuse hyperpigmentation.Investigations revealed hb -17.6 g/dL, wbc 13.6 × 109/L (47% neutrophils and 36% lymphocytes), platelets 129 × 109/L,anc 7.2 × 109/L,I/T ratio0.05 and CRP 9.6 mg/L.Metabolic profile were normal.LP was done i/v/o meningitis. CSF examination shows elevated proteins(236),decreased glucose(32),cells 55(95% lymphocytes) suggestive of viral meningitis.

DIAGNOSIS: At Day 2 of admission, the baby started to develop 4 episodes of seizures ,also erythematous rash with petechiae, predominantly found over the back and intermittent nocturnal fever (38°C).Seizures were treated with AED's and antibiotics have been hiked to meropenam and vancomycin. Blood and CSF culture were sterile.EEG showed diffuse slowing compatible with the diagnosis of encephalitis.Day 3 of admission, there was a generalized macular brown-to-black hyperpigmentation with interspersed patchy areas of normal skin. Accentuated pigmentation was observed on the nose (Chik sign).Based on the clinical presentation,examination findings and endemicity of chikungunya in the region, a diagnosis of chikungunya pigmentation was considered. Immunoglobulin M (IgM) antibodies against the chikungunya virus were positive, thus confirming the diagnosis of NEONATAL ENCEPHALITIS due to CHICKUNGUNIYA infection.On follow up at 40 days old,the baby was gaining weight,hyper pigmented lesions has been subsided on face and trunk. MRI was done at follow up and shows

hyperintensity signals on diffusion-weighted imaging (DWI) involving the subcortical white matter of the frontal, parietal,corpus callosum areas.

CONCLUSION: Chikungunya neonatal infection is rare, which makes the diagnosis quite challenging.The peculiarity of present case is that the neonate was not infected by maternal to fetal transmission but was infected postnatally after discharge from the hospital. This was confirmed by positive IgM in neonate and a negative IgM serology on mother. No other family member was infected. In a dengue-endemic country, arboviral infections, basically CHIKV, should be suspected and ruled out in case of sepsis not corresponding to conventional antibiotics in neonates born to the mothers from dengue-endemic regions.As India, is Endemic.



P 72

Neonatal thrombosis –Keep in mind before UAC insertion

Dr Sumayya Abdulla E , Dr. Rahul Illaparambath , Dr. Sherinas Rehman

Iqraa International Hospital and Research Centre – Calicut , Kerala

Introduction:

Thrombotic events are uncommon in newborns, however it is increasingly recognized as a complication of comlex neonatal care and adds to morbidity and mortality . Due to altered levels of procoagulant , anticoagulant and fibrinolytic factors newborns are at increased risk of thrombotic events especially in the presence of indwelling catheters .

Clinical summary :

A term neonate born by vaginal delivery was admitted with meconium aspiration syndrome .Baby required ventilator support , central lines and IV antibiotics . Developed PPHN requiring sildenafil, and thrombocytopenia with clinical suspicion of sepsis requiring higher iv antibiotics. Later on day 7, baby developed features of CCF with hypertension. Doppler ultrasound showed total occlusion of infrarenal aorta and thrombus in branches of aorta. Thrombolysis with Alteplase along with unfractionated heparin was given after correcting thrombocytopenia and low fibrinogen .Serial neurosonogram were done Hypertension was managed with labetalol infusion and Enoxaparin continued till day 55 after total recanalisation was evident in all branches of abdominal aorta . Follow up thrombophilia workup at 1 year of age was normal .

Second case with similar presentation was identified early from our experience and managed successfully with Inj. Tenecteplase and Unfractionated heparin.

Conclusion:

Neonatal thrombosis is diagnosed fairly rarely .Indwelling catheters and prematurity are risk factors. Early identification is crucial . Doppler ultrasound techniques are life saving. Treatment options varies greatly due to lack of scientific evidence in affected neonates

Reference:

1. Monagle P, Anti thrombotic therapy in neonates and children . Uptodate September 2024.

P 73

Abstract: Neonatal Umbilical Stump Bleeding and Congenital Afibrinogenemia

Background

Congenital afibrinogenemia is a rare autosomal recessive disorder characterized by undetectable circulating fibrinogen levels. This case report presents a neonate with prolonged umbilical stump bleeding, leading to the diagnosis of this rare condition.

Case Presentation

A 9-day-old male infant, born to consanguineous parents, presented with persistent umbilical stump bleeding since birth. The patient's elder sibling had died on day 3 of life with similar symptoms. Initial laboratory investigations revealed prolonged PT, aPTT, and INR, with deficient plasma fibrinogen levels (44 mg/dL).

Management and Outcome

The patient was initially treated with fresh frozen plasma and cryoprecipitate transfusions. Subsequently, prophylactic Fibrinogen Replacement Therapy (FRT) was initiated using fibrinogen concentrates. The dosage was adjusted based on plasma fibrinogen levels, maintaining a target of ~50 mg/dL. Genetic analysis confirmed a homozygous mutation in the FGB gene, consistent with congenital afibrinogenemia.

Conclusion

This case highlights the importance of early recognition and management of congenital afibrinogenemia in neonates presenting with umbilical stump bleeding. It also demonstrates the effectiveness of prophylactic fibrinogen concentrate administration in preventing life-threatening bleeding episodes and improving the patient's quality of life.

Keywords

Congenital afibrinogenemia, neonatal bleeding, umbilical stump bleeding, fibrinogen replacement therapy, rare bleeding disorders

P 74

Role of serum IgA in early establishment of the gut maturity and immunity and predisposition for feed intolerance and necrotizing enterocolitis

£**Dr.Narayanan.E**, Dr.Vaideeswaran.M, Dr.Anitha.M, Dr.Muthukumaran.N

£Assistant professor of Neonatology, Institute of child Health, Egmore

Category: Gastroenterology

NNF Fellowship Number: TN/L-4146

Oral presentation

Abstract

Introduction: Colonization and maturation of gut micro biota during early life influences establishment of gut immunity and later-life health of various mammals. Secretory IgA plays an important role in regulation of microbes found in breast milk and is generated actively by infants. There is paucity of Serum IgA related studies in India

Aims & Objectives: To find out base level of serum IgA in neonates. To find out level of serum IgA in neonates after initiation of feeds and who has predisposition for feed intolerance and necrotizing enterocolitis

Methods: Prospective cohort study .30 Sick neonates admitted in SNCU needing mechanical ventilation and inotropes was included. Feeds were started once neonate is hemodynamically stable. Serum IgA levels was assessed once feed is started and their predisposition to feed intolerance/ necrotizing enterocolitis was assessed.

Results: Mean birth weight was 0.900 ± .70 grams .Males were predominant(70%).Preterm neonates < 28 weeks was 20(66.7%),28-32 weeks5 (16.6%),32-36 weeks 5 (16.7%) .Mean respiratory rate was 34 ± 3/ min,Saturations 94 ± 2.4 %,Heart rate 124 ± 2 / min. respectively. Mean Hemoglobin was 11 ± 1.3, Total count 3200 ± 25, Platelet count1.1±0.34, CRP 23± 11, Sodium 123±21.Serum IgA baseline was 5 and after initiation of feeds serum IgA was 2.5.

Conclusion: Serum Ig A played a role in establishment of the gut maturity and predisposition for feed intolerance and necrotizing enterocolitis. But larger studies are required to establish the role of serum IgA.

Key words: feed intolerance, necrotizing enter colitis, gut maturity

P75

OUTCOME OF CONGENITAL DIAPHRAGMATIC HERNIA IN A NON- ECMO TERTIARY CARE CENTER IN SOUTHERN INDIA: A RETROSPECTIVE STUDY

D V Joy, M R Idicula, U Sihag, R K Madathil, L S Kamath, K K Diwakar

INTRODUCTION

Congenital diaphragmatic hernia (CDH) is a deathly developmental defect that permits herniation of abdominal organ herniation into thorax. Major studies done on Congenital diaphragmatic hernia is based in high income settings.

AIM: The primary outcome measure was survival to hospital discharge.

METHODOLGY

We retrospectively reviewed the medical records of neonates admitted with suspected CDH to a level III NICU in a tertiary referral center over a 12-year period (2012–2024). We compared baseline demography, disease types, therapeutic modalities and respiratory indicators between survivors and non-survivors.

RESULTS

Altogether 33 neonates were included in the study, 78% (26/33) were males,57.6 % (19/33) had antenatal diagnosis and 39.4% (13/33) were referred from elsewhere. For 75.4% (25/33) cases conventional ventilation remained primary mode of respiratory support, 24% (8/33) required rescue HFO. Surgical repair was possible in 87.95 (29/33) out of which 62 % (18/29) had thoracoscopy. Final diagnosis for 89.6% (26/29) were CDH, 10.3% (3/29) were cases of eventration. The overall survival was 81% (27/33) with a median hospital stay for 12 days (7,18.5). Mann-Whitny test showed median OI of 2.7 (1.9,3.5) and median Mechanical Ventilation Index of 41 (35,54) was associated with better survival.

CONCLUSION

We report an overall survival of 82 % for CDH case, lower OI and MVI increased the likelihood of survival.

P 76

Abstract: Novel Teriparatide Therapy for Hypocalcemia-Induced Refractory Status Epilepticus in Neonatal DiGeorge Syndrome

Background

DiGeorge syndrome, a rare genetic disorder caused by a deletion on chromosome 22q11.2, can present with varied clinical manifestations. This case report highlights an unusual presentation of severe hypocalcemia leading to refractory status epilepticus in a neonate with DiGeorge syndrome, and introduces a novel treatment approach using teriparatide.

Case Presentation

A one-month-old female infant presented with refractory seizures requiring multiple antiepileptics and mechanical ventilation. Clinical examination revealed subtle dysmorphic features. Laboratory investigations showed severe hypocalcemia (total calcium 4.5 mg/dL) with inappropriately low parathyroid hormone levels (1.05 pmol/L). Genetic testing confirmed DiGeorge syndrome with a heterozygous deletion at 22q11.21.

Management and Outcome

Initial treatment with intravenous calcium, calcitriol, and oral calcium supplementation proved insufficient. Teriparatide, a recombinant human parathyroid hormone analog (PTH 1-34), was initiated at 2.5 mcg subcutaneously every 12 hours. This novel therapy in neonates led to normalization of serum calcium levels, cessation of seizures, and allowed tapering of antiepileptics. The patient remained stable on follow-up with normal calcium levels and developmental milestones.

Conclusion

This case underscores the importance of considering DiGeorge syndrome in neonates presenting with refractory seizures and hypocalcemia. It also demonstrates the potential efficacy of teriparatide as a novel therapy for managing recalcitrant hypocalcemia in neonatal primary hypoparathyroidism associated with DiGeorge syndrome.

Keywords

DiGeorge syndrome, neonatal seizures, hypocalcemia, hypoparathyroidism, teriparatide therapy

Abstract: Neonatal Umbilical Stump Bleeding and Congenital Afibrinogenemia

Background

Congenital afibrinogenemia is a rare autosomal recessive disorder characterized by undetectable circulating fibrinogen levels. This case report presents a neonate with prolonged umbilical stump bleeding, leading to the diagnosis of this rare condition.

Case Presentation

A 9-day-old male infant, born to consanguineous parents, presented with persistent umbilical stump bleeding since birth. The patient's elder sibling had died on day 3 of life with similar symptoms. Initial laboratory investigations revealed prolonged PT, aPTT, and INR, with deficient plasma fibrinogen levels (44 mg/dL).

Management and Outcome

The patient was initially treated with fresh frozen plasma and cryoprecipitate transfusions. Subsequently, prophylactic Fibrinogen Replacement Therapy (FRT) was initiated using fibrinogen concentrates. The dosage was adjusted based on plasma fibrinogen levels, maintaining a target of ~50 mg/dL. Genetic analysis confirmed a homozygous mutation in the FGB gene, consistent with congenital afibrinogenemia.

Conclusion

This case highlights the importance of early recognition and management of congenital afibrinogenemia in neonates presenting with umbilical stump bleeding. It also demonstrates the effectiveness of prophylactic fibrinogen concentrate administration in preventing life-threatening bleeding episodes and improving the patient's quality of life.

Keywords

Congenital afibrinogenemia, neonatal bleeding, umbilical stump bleeding, fibrinogen replacement therapy, rare bleeding disorders

P 77

ASSOCIATION OF COVID 19 ANTIBODIES IN FETAL GROWTH RESTRICTION AND SMALL FOR GESTATIONAL AGE AMONG NEWBORN BABIES.

INTRODUCTION

The novel coronavirus, termed SARS cov 2 is a major public health challenge over the world. Since december 2019 the outbreak of COVID 19 infection has become a major epidmic all over the world. However there have been only few studies in pregnant woman relating to the clinical course and outcomes of COVID 19 infection during pregnancy and potential risks to unborn child. There are certain evidences which showed that hypoxia and decreased in ACE2 content in pregnant women with SARS-cov 2 infection affect fetal development. Also the immune response in pregnant women infected with SARS-cov 2 infection affects fetal and neonatal development. Moreover till now there is a limited evidence of intrauterine vertical transmission of SARS- COV 2 infection in pregnant women and the potential risk to the mother and baby have become a matter of major concern.

Aims and Objective(s) of the Study:

1. Our study aims to detect antibodies against COVID 19 among the intrauterine growth restriction infants and small for gestational age infants and to see the association of the asymptomatic COVID 19 infection among the mothers or if there was any exposure to COVID 19 to mother antenatally.

Proposed Methodology

Subjects

Inclusion Criteria

1. All neonates with both symmetrical and assymetrical IUGR components
2. All neonates who are small for gestational age.

Exclusion Criteria

1) Neonates with chromosomal abnormalities

2) Parents not willing for the study

Cases will be selected based on inclusion and exclusion criteria and detailed clinical examination and anthropometry will be done. Neonate will be categorised as symmetrical or assymetrical IUGR based on the ponderal index.

Neonates who are small for gestational age will also be included in the study. Parents are informed about the procedure and consent is obtained regarding the same. Blood Serum samples will be analysed for IgG and total antibodies by using recombinant protein representing the SARS – COV2 S1 RBD antigen.

RESULT

Our Study showed that 44% of mothers were clinically COVID positive during the pregnany and all the mothers were tested negative by RT PCR analysis for covid at the time of delivery.

It was seen that 68% of infants who had fetal growth restriction were tested positive for covid 19 IgG antibodies.

CONCLUSION

Our study is one of the first to evaluate the association of COVID 19 during pregnancy which could be the cause of IUGR. It was found that there was a strong association between the maternal infection with covid 19 during pregnancy leading to fetal growth restriction in intrauterine life. Although clear pathogenesis is not understood for causation of FGR due to COVID 19 but we do believe that in this era of covid 19, it could be most important infectious agent leading to FGR. The limitations of the study may provide insight into future studies on whether there is a real relationship between maternal covid 19 infection leading to fetal growth restriction.

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Percutaneous device closure of patent ductus arteriosus in preterm neonates: experience from a tertiary care hospital in India

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Abstract

Introduction

Patent ductus arteriosus (PDA) is traditionally managed with surgical duct ligation if the pharmacological management fails. Recently, newer percutaneous PDA devices, such as Amplatzer Piccolo™ Occluder, have shown excellent safety and efficacy and have been approved by the US-FDA. However, data on their feasibility is scarce from India.

Aims and objectives

To evaluate the efficacy and feasibility of percutaneous device closure of PDA in preterm neonates

Methods

This retrospective study included all inborn preterm neonates who underwent percutaneous device closure of PDA. At our center, the procedure is performed by trained pediatric cardiologists in the catheterization laboratory using a transvenous approach under fluoroscopic and echocardiographic guidance, under general anesthesia. Data on patient profile, device used, and outcomes till the last follow-up were retrieved and described.

Results

Eight infants, with mean gestation 28.7 ± 2.0 weeks and birth weight 934 ± 201 g, underwent PDA device closure between December 2022 and August 2024. At the time of procedure, median age was 39 days (IQR 32,59) and median weight was 1.32 kg (IQR 1.09, 2,06; range 0.93-3.2). The clinical indication was respiratory distress or persistent ventilatory requirement in all infants. Mean PDA diameter and length at procedure were 2.7 ± 0.7 mm and 5.3 ± 1.6 mm respectively. Piccolo™ device was used in all eight infants; successful PDA closure was achieved in seven infants (87.5%). Four of these infants showed resolution of clinical features. One infant developed high aortic pressure gradient post-procedure necessitating device removal and surgical PDA clipping. Another infant developed shock post-procedure which resolved in 24 hours. No procedure-related death occurred.

Conclusions

Percutaneous device closure is feasible in preterm neonates. Further studies to assess its efficacy and safety are needed.

Table 1. Patient characteristics of the infants who underwent percutaneous device closure for patent ductus arteriosus

Patient number	Gestation (wks)	Birth weight (g)	Sex	Perinatal status	First pharmacological course (agent, route, age at treatment in days)	Second pharmacological course (agent, route)	Respiratory support prior to device closure	Age at device closure (PNA in days, PMA in weeks)	Weight (kg) at procedure	PDA diameter (mm)	PDA length (mm)	Procedure-related complications
1	30	1395	M	ANS complete, PPV at birth, RDS	iv PCM (12 doses), day 8	iv PCM (12 doses) followed by oral high-dose ibuprofen (3 doses)	CPAP	40, 38	1.89	3.5	4.8	No
2	27	835	M	ANS complete, smooth perinatal transition, RDS	Not given (hsPDA detected on day 39 of life)	Not applicable	Room air	77, 38	2.24	2	4	No
3	27	930	M	ANS complete, PPV at birth, RDS	iv PCM (12 doses), day 4	Oral high-dose ibuprofen (3 doses)	Mechanical ventilation	35, 35	1.30	1.6	3	No

4	28	900	M	ANS complete, PPV at birth, RDS	Oral PCM (12 doses), day 25	Oral high-dose ibuprofen (3 doses)	Mechanical ventilation	39, 34	1.34	2.5	5.5	No
5	33	820	M	ANS complete, severe IUGR, PPV at birth, no RDS	Not given (hsDPA detected on day 129 of life)	Not applicable	Mechanical ventilation	131, 51	3.2	3	DNA	No
6	27	800	M	ANS complete, PPV at birth, RDS	iv PCM (12 doses), day 2	Not given (ductal closure noted after first course; recurrence of hsPDA on day 35)	Mechanical ventilation	41, 32	0.94	3.8	6	Yes, post-procedure shock which resolved in 24 hours
7	29	780	M	ANS complete, smooth perinatal transition, RDS	iv PCM (12 doses), day 7	Oral high-dose ibuprofen (3 doses)	Mechanical ventilation	27, 33	0.93	3	8	No
8	29	1015	F	ANS complete, smooth perinatal transition, no RDS	iv PCM (12 doses), day 4	iv PCM (12 doses)	CPAP	30, 34	1.25	2.3	6	Post-procedure high aortic pressure gradient (acquired coarctation) noted necessitating device removal
Mean ± SD/ Median (IQR)	28.7 ± 2.0	934 ± 201						39.5 (32.5,59), 34.5 (33.5,38)	1.32 (1.10,2.06)	2.71 ± 0.75	5.33 ± 1.61	

Abbreviations: PNA postnatal age, PMA postmenstrual age, M male, F female, ANS antenatal steroids, PPV positive pressure ventilation, RDS respiratory distress syndrome, PCM paracetamol, iv intravenous, CPAP continuous positive airway pressure, hsPDA hemodynamically significant patent ductus arteriosus, IUGR intrauterine growth restriction, DNA data not available

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"NOT SO SIMPLE" – VESICLE:

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ABSTRACT:

INTRODUCTION:

The incidence of HSV infections in neonates is 1 in 3000 to 1 in 20,000 live births (1). Infants usually present by 10-12 days of life with signs of sepsis or shock (2) We present a rare scenario in which a neonate had vesicular lesions and keratitis at birth.

AIMS AND OBJECTIVES:

1. To understand that neonatal herpes can present at birth, rarely.
2. To highlight the early involvement of multidisciplinary team in enhancing outcomes and reducing recurrences in neonatal herpes.
3. To outline the principles of management of ocular involvement in neonatal herpes.

MATERIALS AND METHODS:

Interventional case report.

RESULTS:

A 29 weeks preterm neonate, 1.2 kg at birth, was delivered vaginally in view of PPROM. The neonate had clustered vesicular lesions surrounded by erythema over the chest and abdomen at birth. Baby was mechanically ventilated in view of perinatal depression, and started on empirical IV antibiotics and Inj. Acyclovir. Contact precautions were followed and isolation was done.

Ophthalmic examination showed erythematous eyelids and fluorescein staining showed keratoconjunctivitis with epithelial defect. Tzanck smear and skin biopsy showed multinucleated giant cells. Blood HSV PCR was positive for HSV – 1. CSF analysis was normal and CSF HSV PCR was negative. Baby was treated with Apidine eye drops initially, and Refresh tears eye drops later. Once the epithelial defect healed, Prednisolone eye drops and Atropine ointment were started.

Inj. Acyclovir was given for 21 days. Skin lesions healed and the baby was discharged on day 27 of life on Paladai feeds and Oral Acyclovir prophylaxis for 6 months. At review, baby is thriving well and is on neurodevelopmental follow up. The cornea has cleared completely and there is no ROP.

CONCLUSION:

1. Herpes can present at birth. A high index of clinical suspicion is essential to diagnose herpes in neonates presenting with sepsis.

2. Early initiation of Acyclovir reduces mortality and improves outcomes.

3. Acyclovir prophylaxis reduces recurrence rates in neonatal herpes.

4. Early multidisciplinary team involvement reduces morbidity and enhances outcomes.

ABBREVIATIONS:

HSV	Herpes Simplex Virus
PPROM	Preterm Premature Rupture Of Membranes
IV	Intravenous
PCR	Polymerase Chain Reaction
CSF	Cerebrospinal Fluid
ROP	Retinopathy Of Prematurity

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P80

Arthrogryposis, renal dysfunction, cholestasis syndrome with interaction of two novel mutations: A case report

Background

Arthrogryposis, renal dysfunction, and cholestasis (ARC) syndrome is a rare autosomal recessive disorder caused by mutations in VPS33B and VIPAR genes. These genes are crucial for intracellular protein sorting and vesicular trafficking. Presentation varies; not all patients exhibit all three primary features. More than half of patients experience dermatologic changes. Arthrogryposis is believed to stem from neurogenic muscle atrophy

Case Presentation

This case study presents a full-term infant with neonatal jaundice, limb flexion deformities, and ichthyosis vulgaris. The syndrome manifests with varying severity, often including cholestasis, renal tubular dysfunction, and arthrogryposis multiplex congenita. Two novel mutations were identified, contributing to the specific phenotype.

Management and Outcome

Management focused on symptom alleviation, including a cholestatic regimen, antibiotics for sepsis, thyroid treatment, and supportive care. Despite initial improvement and discharge after 8 weeks, the infant was readmitted with severe symptoms and expired within 48 hours. The prognosis for ARC syndrome is generally poor, with most patients not surviving beyond the first year of life. Currently, there is no cure, and treatment is primarily supportive.

Conclusion

The study highlights the complex nature of ARC syndrome, its varied clinical presentations, and the urgent need for further research. It underscores the challenges in managing this multisystem disorder and the importance of early diagnosis and comprehensive care in improving outcomes for affected individuals.

Keywords

ARC syndrome, VPS33B gene, Ichthyosis vulgaris

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ABSTRACT

Title: Normative Data of Echocardiographic Parameters of Fluid Responsiveness in Preterm Neonates during the First Week of Life: A Mixed Longitudinal Study

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Place of study: Neonatal Unit, PGIMER Chandigarh

Introduction: Hemodynamic instability in preterm neonates requires precise fluid management. Traditional methods of assessing fluid responsiveness are unreliable, leading to increased interest in echocardiography.

Aims & Objectives: To establish the normative values of echocardiographic parameters of fluid responsiveness viz. respiratory variation in aortic blood flow peak velocity (ΔVpeak), inferior vena cava collapsibility index (IVC-CI), stroke distance (VTI) and stroke volume index (SVI) in preterm neonates during the first week of life and to explore the interaction of respiratory support with these parameters.

Material & Methods: In this mixed longitudinal study, hemodynamically stable, <32 week neonates, on room air or CPAP were enrolled. Echocardiography was performed on days 1, 3, and 7 to measure the dynamic parameters of fluid responsiveness. Interaction of respiratory support with these echocardiographic parameters was also investigated.

Results: There was a significant decrease in mean LVOT-VTI(cm) from 9.09(1.66) on day-1 to 8.33(1.52) to day-7 (p=0.017). Mean IVC-CI(%) showed an increasing trend from 45.3(10.2) on day-1 to 48.5(9.3) on day-7 (p=0.09). Median ΔVpeak and SVI were comparable between the three time-points. The dynamic echocardiographic variables (ΔVpeak and IVC-CI) remained relatively stable in the CPAP group but varied in the room air group over first week. However, there was no effect on static variables (LVOT-VTI and SVI).

Conclusion: The study generated normative data of echocardiographic parameters of fluid responsiveness in <32 weeks neonates in first week of life. Dynamic echocardiographic variables remained stable in the CPAP group but varied in the room air group over first week.

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ABSTRACT

Morbidity and mortality profile of preterm neonates admitted in neonatal intensive care unit of tertiary care centre in Mumbai

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Introduction: Preterm birth is a major cause of mortality and morbidity for newborns. Morbidities associated with prematurity are increasing as survival is increasing. Also with increasing use of assisted reproductive techniques, multiple gestations are increasing and morbidities associated with it also increase in incidence

Aims and objectives: To study clinical profile and outcome in preterms of various gestational age and also between singleton and twin preterms.

Methods: A retrospective hospital based clinical observational study was conducted in NICU in Cloudnine hospital, a tertiary care centre in Mumbai. Data regarding neonate's gestatinal age, sex, birth weight, clinical presentation, complications and outcome were recorded. Also comparison was made between singleton and twin babies .

Results: A total of 151 preterm neonates were enrolled in the study.

In our study 55% were singleton and 45% were twins. Singleton were noted to have higher APGAR at 1min, higher gestational age and higher birth weight compared to twins.There was no difference in terms of morbidities except anaemia requiring PRBC transfusion was seen more in singletons.(p value-0.08)

In our study, majority were born between 28-32 weeks(39.7%), majority were AGA(85.4%). Higher number of SGA were observed in gestation age>34 weeks.In terms of morbidities, RDS and surfactant requirement , anaemia requiring PRBC transfusion , CLD and requirement of steroids, LOS, shock, apnea of prematurity decreased with increase in gestation age. EOS was seen in 28-32 weeks and >34 weeks gestational age ; NEC and hypoglycaemia was seen in 28-32 weeks gestational age.3 mortalities(1.9%) were seen in study

Conclusions: This study shows increase in morbidity and mortality with decrease in gestational age. No significant morbidities difference was seen in twins as compared to singleton.

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Kangaroo mother care improves cardiorespiratory physiology in preterm infants

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Introduction: While kangaroo mother care (KMC) is a common practice in neonatal units worldwide, studies evaluating its effects on oxygenation are heterogeneous for cohorts, interventions and assessments.

Objectives: To evaluate whether KMC in preterm infants on respiratory support improves indices of cardiorespiratory wellbeing.

Methods: This was a prospective quasi-experimental observational study at a tertiary perinatal neonatal unit. Fifty very preterm infants being managed with nasal continuous positive airway pressure were included. The interventions included continuous high-resolution pre-ductal pulse-oximetry recordings using Masimo Radical-7® oximeter for one hour (incubator care) followed by one hour during KMC performed on the same day. Measures of cardiorespiratory stability (dips in oxygen saturations [SpO2]) of ≥5% less than baseline, % time spent with oxygen saturations <90%, SpO2 variability and heart rate fluctuation, and incidence of bradycardias were assessed.

Results: The gestational age and birthweight of the cohort were 28.4±2.1 weeks and 1137±301g, respectively. Dips in SpO2 of ≥5% less than baseline were significantly fewer with KMC, median (interquartile range [IQR]) 24 [12, 42] vs 13 [3, 25], P=0.001. SpO2 variability (Delta 12 s and 2s), (1.24±0.6 vs 0.9±0.4, P=0.005 and 4.1±1.7 vs 2.8±1.2, P<0.0001) and rapid resaturation & desaturation indices were significantly lower during KMC, compared to incubator care. Percentage time spent in O2 saturations <90% was less with KMC (7.5% vs 2.7%, P=0.04). Mean heart rate was comparable although fluctuations in heart rate (rise by >8 beats/min) were significantly lower with KMC. Seven (14%) infants had bradycardias during incubator care and none during KMC, P=0.012.

Conclusions: KMC improved cardiorespiratory stability & reduced intermittent hypoxemia in preterm infants. High-temporal resolution continuous recordings capture the complexity of the information. Regular KMC has the potential to improve clinical outcomes in this vulnerable cohort.

Table. Oxygenation and heart rate data obtained from continuous oximetry

Oxygenation and heart rate variable	**Incubator care**	**KMC**	**P**
Mean ± S.D SpO2 (IQR of means, %)	95±3 (87-99) CI (94.2-95.8)	97±2 (90-100) CI (96.3-97.7)	0.002
Dips in SpO2 of ≥5% lower from baseline/hour of recording time (n)*	24 (12, 42) CI (15-33)	13 (3, 25) CI (1-26)	0.001
Total events x maximum event duration (sec) when SpO2 ≥5% lower of baseline*	1727 (282, 2570) CI (1171-2283)	831 (32, 1198) CI (503-1159)	0.006
Total events x average event duration (sec) when SpO2 ≥5% lower of baseline*	298 (118, 395) CI (227-369)	169 (20, 268) CI (120-218)	0.003
Delta index 12s	1.24±0.6 CI (1.1-1.4)	0.9±0.4 CI (0.78-1.02)	0.005
Delta index 2s	4.1±1.7 CI (3.6-4.6)	2.8±1.2 CI (2.46-3.1)	<0.0001
Rapid resaturation index	64.1±34.4 CI (54-74	40.2±25.8 CI (33-47)	0.0001
Rapid desaturation index	36.7±23.6 CI (30-43.5)	21.5±17 CI (11.5-31.5)	0.0004
Average heart rate (beats/min)	162±10 CI (159-165)	162±9 CI (160-164)	0.8
Pulse rise by >8/minute (number of events) (n=45)	43±22 CI (38-50)	33±20 CI (27-39)	0.03

CI-95% confidence interval, *median (interquartile range), S.D.-standard deviation

P 84

Title: Use of probiotics for preventing necrotizing enterocolitis in preterm infants – a survey of current practices among Indian neonatologists

Authors: Anil H, Kiran More, Astha Amrit, Somashekhar M. Nimbalkar, Sanjay Patole.

Place: Pramukhswami Medical College, Bhaikaka University, Karamsad, Anand, Gujarat

ABSTRACT

INTRODUCTION: Probiotics are known to significantly reduce the risk of necrotizing enterocolitis, all-cause mortality, sepsis, and feeding intolerance in preterm infants. Probiotics have been reported to have comparable benefits in high- and low-middle-income countries. Still, the use of probiotics in preterm is limited across various countries.

AIM: To assess the current probiotic supplementation in preterm practices of Indian neonatologists.

MATERIAL AND METHODS: A questionnaire created on the web-based tool Survey Monkey was sent to neonatologists in India. Survey forms automatically converted responses into Excel files. Data was analyzed using SPSS.

RESULTS: 615 responses were received from various neonatal intensive care units in India [Level I:7%, II: 20.8%, III: 72.80%]. Around 70% of the units had National Neonatology Forum (NNF) accreditation or IAP fellowships or were affiliated to private or government medical colleges. Routine probiotic supplementation (RPS) was provided in 39.1% of the responding units; 48%quoted inadequate evidence as the reason for not providing RPS, 33.43% quoted difficulty in sourcing safe and effective products, whereas others were concerned about adverse effects. Most centers provided RPS for preterm infants <32 weeks and 1500 grams at birth. Attending clinician's judgment influenced clinical practice hence variations were noticed in the protocol.

CONCLUSION: Findings of the survey suggest that 39.1% of the participating neonatologists in India currently offer RPS for preterm infants. A significant variation exists in the selection of probiotic strains, products, dose, and duration of supplementation. Despite limitations, our findings are useful in guiding clinical practice and further research to optimize the safety and efficacy of probiotic supplementation.

P 85

Title: Whole genome sequence analysis of potential probiotic organisms isolated from breastmilk of Indian mothers

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Place of study: Pramukhswami Medical College, Bhaikaka University, Karamsad, Gujarat

ABSTRACT

Introduction: Breastmilk is vital in forming the newborn microbiome and affects various health outcomes. With more studies coming up on the benefits of probiotics in newborn, simultaneously there are growing concerns about their safety. Though the human milk microbiome is known to harbor beneficial bacterias and can become a safer alternative, their genomic data are scarce.

Aim: To isolate the breastmilk microbiome and study it's functioning and safety profile at the genetic level using whole genome sequencing [WGS].

Methods: The study included 30 mothers, whose milk samples were analyzed at three time points. DNA extraction was done after the isolation and identification of organisms by culture-based method. The isolates' clean reads obtained by the above methods were submitted to PATRIC's comprehensive genome analysis service (the all-bacterial Bioinformatics Database and Analysis Resource Center).

Results: 38 different bacterial species were identified by MALDI-TOF MS. Of which 6 were selected for WGS. On analysis, 2 isolates thought to be Staphylococcus hominis and Weissella cibaria, turned out as Staphylococcus hemolyticus and Bacillus altitudinis. No antimicrobial resistance [AMR] genes were found in Micrococcus luteus, Micrococcus lylae, and Lactobacillus gasseri, but Bacillus altitudinis, Staphylococcus hemolyticus and Staphylococcus warneri had resistance genes. All the tested isolates had various virulence factors [VFs]. But none of the AMR and VFs genes were present on IS elements and none of the isolates were plasmid-encoded rendering these genetic materials non-transferable.

Conclusion: This study gives an insight into strain identification, functional pathways, antimicrobial resistance genes, and virulence factors associated with human milk microbiome.

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Tropical infections in newborns - A case series

Authors

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Place of study: Surya mother and child hospital, Pune.

ABSTRACT

Tropical fevers are infections that are prevalent in, or are unique to tropical and subtropical regions. Some of these occur throughout the year and some especially in rainy and post-rainy season. Tropical fevers include Dengue, Malaria, Typhoid, Yellow fever, Zika, Chikungunya, Leptospirosis, Scrub typhus, influenza etc. Bacteria and viruses are two organisms that cause tropical diseases. Tropical infections manifesting in neonates is very rare.

We hereby present a series of 5 cases of tropical infections which presented to our NICU out of which 2 were congenital chikungunya,2 were neonatal chikungunya and 1 was an interesting case of coinfection of dengue and zika virus. These infections were suspected and confirmed by serology (PCR) which was positive both in the baby and in mother in 2 cases, while positive in baby and negative in mother in other 3 babies. In endemic areas, paediatricians should have a low threshold of suspicion for perinatal or neonatal tropical infections in any infant presenting with signs and symptoms mimicking sepsis, especially with skin manifestations, seizure and/or encephalopathy. These infections although rare should be considered in any neonate presenting with fever and facial hyperpigmentation or encephalopathy especially in endemic areas.

Keywords- Tropical fever , Dengue, Chikungunya, Zikavirus

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Tropical infections in newborns - A case series

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Tropical fevers are infections that are prevalent in, or are unique to tropical and subtropical regions. Some of these occur throughout the year and some especially in rainy and post-rainy season. Tropical fevers include Dengue, Malaria, Typhoid, Yellow fever, Zika, Chikungunya, Leptospirosis, Scrub typhus, influenza etc. Bacteria and viruses are two organisms that cause tropical diseases. Tropical infections manifesting in neonates is very rare.

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Keywords- Tropical fever , Dengue, Chikungunya, Zikavirus

P 88

Abstract

Title: Comparing safety of two drug regimens for pupillary dilatation for retinopathy of prematurity screening in preterm neonates: a double- blinded randomized crossover trial

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Background

The side effect profile of one dilatation regimen for retinopathy of prematurity screening over the other is not well studied.

Objectives

The primary objective was to compare the effect of two mydriatic regimens, namely, instillation of 0.5% tropicamide followed by 0.5% tropicamide followed by combination of 0.5% tropicamide and 2.5% phenylephrine [T regimen] with a combination of 0.5% tropicamide and 2.5% phenylephrine instilled thrice [Tp regimen], on the diastolic BP and HR, until 15±5 minutes after ROP screening.

Methods

CTRI registration number for this trial is CTRI/2022/01/039339. It was a double-blinded, randomized crossover trial conducted from April 2022 to July 2023. The infants needing ROP screening were randomly assigned to either of the two drug regimens at the enrollement (Period 1) and were administered the other regimen during crossover (Period 2) which would be during the next ROP screening. During each period, baseline BP and HR (1 hour±15 minutes prior to the start of instillation of mydriatic drops), BP and HR and after 15±5 minutes of ROP screening, were measured. Generalized estimating equations population-averaged model was used to compare the two regimens and the differences in BP and HR were represented as adjusted mean differences (adjusted for the baseline value, period and crossover effect) with 95% confidence interval.

Results

Adjusted mean difference (from the baseline, until 15±5minutes after ROP screening) in diastolic BP for T regimen, compared to Tp regimen, was -1.8 mm Hg (95% CI -4.1 to 0.6) [p=0.14] and that for systolic BP was -2.9 (95% CI -5.8 to 0.1) [p=0.06]. For HR, the adjusted mean difference for T regimen as compared to Tp regimen was +4.5 bpm (95% CI 0.4 to 8.7) [p=0.03].

Conclusion

Mydriatic regimens (T and Tp) are not very different in terms of cardiovascular safety.

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Title: Inferior vena cava collapsibility and cardiac output measurements before and after a single

fluid bolus in newborns.

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Sub- Speciality: Neonatology

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Abstract:

Background

Newborns often need fluid boluses. In addition to clinical judgment, now point of care ultrasound (POCUS) has aided bedside evaluation of the fluid status of newborns. Inferior vena cava (IVC) collapsibility and cardiac output (CO) are the important parameters for this evaluation.

Aims and Objectives:

This study aims to evaluate the changes in ultrasound measurements of IVC Collapsibility, IVC diameter and CO before and after fluid bolus.

Methods :

We conducted a prospective observational study in Tertiary care hospital.All newborns who required fluid bolus were enrolled in our study. The newborns with congenital heart disease, poor cardiac contractility or congestive cardiac failure, hydrops, ongoing blood loss, were excluded. Considering of the non-availability of the data, we have considered the minimum sample size of 41 according to the interim analysis. Paired t test and McNemar's test were applied to test intra-group differences. P value of < 0.05 is considered significant.

Results:

During 11 months prospective cross sectional study, Total 604 neonates were admitted in NICU out of which 41 neonates were enrolled. Demographic characteristics are presented in (Table1)

Table 1: Demographic characteristics

Mother Variables	**Mean ±SD**
Age(Years)	26.6 ± 5.29
Caesarean	27(67%)
Neonatal Variables	
Male gender	27(67%)
Birth weight (kg)	2.17 ±0.74
Gestational age (weeks)	35.7(3.56)
Preterm(%)	22(55%)
APGAR Score(<6)(n=20) 1 minute 5 minute	 5(25%) 0
Type of Ventilation,n(%) On Room Air On CPAP On Invasive Ventilation	 14(34%) 9(22.5%) 18(45%)
Diagnosis Dehydration Birth asphyxia RDS Septicemia PAH MAS	 10(25%) 12(30%) 14(35%) 10(25%) 6(15%) 4(10%)
On Inotropes support	12(30%)

When mean values of other clinical parameters compared before and after fluid bolus, CRT and Mean arterial pressure significantly increased after giving fluid bolus (Table 2).

Table 2: Clinical parameters before and after fluid bolus (n=41)

VITALS	Before bolus Mean(SD)	After bolus Mean(SD)	P value
Temperature	36.5(0.53)	36.5(0.52)	0.71
Heart Rate	153.04 (23.26)	159.9(21.56)	0.15

Respiratory Rate	60.5(12.9)	60.9(12.7)	0.20
Capillary Refill Time(≥3sec)	12(30%)	8 (20%)	0.0005*
SpO2	94.6(2.76)	94.70(2.50)	0.46
Mean Arterial Pressure	49.3(9.03)	50.3(9.07)	0.001

* Mc Nemar test

When mean values of IVC largest and smallest diameter was compared before and after fluid bolus, significant change is observed. There was no significant change in heart rate, cross sectional area of left ventricular outflow tract area (LVOT) was compared before and after fluid bolus. Mean values of Volume time integral (VTI) and Cardiac output significantly increased after giving of fluid bolus (Table 3).

Table 3: Comparison of IVC Diameter, Collapsibility and Cardiac Output

Parameters	Before bolus Mean(SD)	After bolus Mean(SD)	P value
IVC Largest diameter (cm)	0.31 (0.10)	0.28(0.09)	0.05
IVC Smallest diameter (cm)	0.15 (0.06)	0.18(0.07)	0.016
IVC Collapsibility (%)	58.5(10.3)	44.7(9.3)	0.001
IVC Distensibility (%)	91.8(36.6)	49.9(22.3)	0.007
Volume time integral (m/sec)	5.96 (2.17)	7.78(2.07)	<0.001
Cross sectional area (cm)	0.20(0.06)	0.21(0.13)	0.59
Cardiac Output (ml/kg/min)	92.57(42.72)	120.13(68.0)	0.001

Conclusion:

There was significant improvement in IVC collapsibility/distensibility, VTI and cardiac output after fluid bolus, but no significant difference observed in clinical parameters except CRT and Mean Arterial Blood Pressure.

P 90

DECODING RARE GENES : CLINICAL INSIGHTS AND CARE

A CASE OF CORNELIA DE LANGE SYNDROME

Cornelia de Lange syndrome is a multiple congenital anomaly syndrome characterized by a distinctive facial appearance, prenatal and postnatal growth deficiency, psychomotor delay, behavioral problems, and malformations of the upper extremities. Cardiac defects and gastrointestinal anomalies are common.Other features include myopia, palatal abnormalities, genitourinary abnormalities, congenital diaphragmatic hernias and hearing loss.Majority of the cases are sporadic, but a few cases showing an autosomal-dominant inheritance have been reported.CdLS likely affects 1 in 10,000 newborn.

Girl Baby ,1st born of non-consanginous marriage, born of a 39 weeks gestation by normal vaginal delivery. Antenatal growth scan revealed IUGR with a growth delay of 2 weeks.Baby was admitted in NICU in view of VLBW and dysmorphic features.On examination baby had microcephaly, synophrys, low set ears, depressed nasal bridge,low posterior hairline,cleft palate,short forehead,short broad limbs.Systemic examination was normal.Baby was started on tube feeds and low birth weight care was given.

Laboratory analysis including complete blood count, biochemical parameters and urinalysis were normal. Transthoracic echocardiography was normal. Cranial magnetic resonance imaging was normal.Ophthalmic examination was normal.OAE was done and was suggestive of inadequate functioning of outer hair cells in both the ears.WES revealed the presence of mutations in the NIPBL gene thus confirming Cornelia de Lange syndrome.Now child is on multidisciplinary supportive management and followup.

This case emphasizes the importance of an early recognition of the clinical condition for the family advice, medical aid and for an appropriate development. Genetic study may be useful not only for confirming clinical suspicions of disease but also for determining the severity of the phenotype.

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P 91

Title: Longitudinal Effects of Erythropoietin as a Neuroprotective Therapy Among Preterm Neonates Born Less Than 32 Weeks of Gestation: A Randomized Control Trial

Authors Dr.Jeevanandam**,** Dr.Vedapriya., Dr. Karthikeyan K

Place of study-Mahatma Gandhi Medical College & Research Institute, Puducherry

Introduction:

Preterm neonates, especially those born before 32 weeks of gestation (very preterm), are at high risk for neurodevelopmental impairments, including developmental delay, cognitive deficit, attention, and learning difficulties. Erythropoietin(EPO) has demonstrated neuroprotective and neuroregenerative effects by acting on receptors found in neurons, astrocytes, microglia, and other cells. Its anti-inflammatory, antioxidant, and neurogenic properties are critical for injury repair and normal neurodevelopment.

Aim:

This trial was done to assess the neurodevelopmental outcomes at 6 and 12 months corrected age after early administration of recombinant human EPO among very preterm neonates.

Materials & Methods:

This randomized controlled trial involved very preterm neonates after excluding genetic disorders, severe congenital malformations, prior palliative care, and intracranial hemorrhage(grade 3 or higher). The control group received only standard neuroprotective care while the intervention group also received Injection Erythropoietin(400 IU/kg). Neurodevelopmental outcomes were assessed using the DASII scale at 6 & 12 months. Chi-square and paired t-tests were used to compare the outcomes.

Results:

The analysis followed an Intention-to-treat approach, which included all randomized infants who received the first dose of erythropoietin or none. Among eligible 54 participants, 27 were randomized to receive Erythropoietin. There was no significant difference between the erythropoietin group and the control group in the incidence of death or any neurodevelopmental impairment at 12 months of age (14 infants[52%] vs. 13 infants[48%]; relative risk, 1.03; 95% confidence interval, 0.81 to 1.32; P = 0.80).

Conclusion:

Early erythropoietin administration did not show promising results in improving neurodevelopmental outcomes among infants born very preterm.

P 92

"Exploring Intubation-Related Complications in Neonates: A Comparative Analysis Before and After Implementing a Standardized Protocol with Premedication"

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Place of study : NICU, Dr Mehta multispeciality hospital, Chetpet, Chennai

Sub-specialty category : Intensive care (IC)

ABSTRACT:

Introduction: Airway management in the NICU is linked to life-threatening adverse events that may be preventable.

Aims and Objectives: We aim to identify the incidence of tracheal intubation-associated adverse events (TIAE) in our unit and assess the effectiveness of using a standardized protocol and repeated intubation training with and without premedication.

Materials and Methods: A 2-year study was conducted in the NICU at Mehta Hospital, involving 126 neonates. Three groups of 42 neonates each were studied over 6-month periods. Group I analyzed baseline TIAE incidence, while Group II implemented a standardized intubation protocol, and Group III administered premedication during intubation.

Results: In total, 54 out of 126 neonates (42.9%) experienced TIAE. Specifically, in group I, 23 out of 42 (54.8%) neonates had TIAE, in group II, 20 out of 42 (47.6%) experienced TIAE, and in group III, 11 out of 42 (26.2%) had TIAE. There was a statistically significant decrease in the occurrence of TIAE across the groups (p value – 0.023). No significant harms from the study interventions were identified..

Conclusions: Standardized intubation protocol and repeated training can enhance the intubation success rate and reduce TIAE. Administering premedication to neonates before intubation is safe and can further improve the intubation success rate and reduce TIAE.Standardized intubation protocol and repeated training can enhance the intubation success rate and reduce TIAE. Administering premedication to neonates before intubation is safe and can further improve the intubation success rate and reduce TIAE.

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Title

UTILITY OF TELEMEDICINE AS A SCREENING TOOL TO OBVIATE HOSPITAL VISITS IN PEDIATRIC OUTPATIENTS OF TERTIARY CARE HOSPITAL IN INDIA

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Objectives

To assess the utility of tele-consultation as a screening tool for pediatric patients in terms of successful tele-consultations resulting in avoidance of in-person hospital visit to the satisfaction of doctors and patients.

Methods

We conducted a prospective observational study in the pediatric outpatient department of a tertiary care teaching hospital in New Delhi from February 2022 to January 2023. The patients under 18 years of age were selected by systematic random sampling. 360 patients were enrolled

by obtaining their consent. Tele-consultations were conducted by Post-MD doctors of Pediatrics. Outcomes of the tele-consultations were recorded. Separate study tools viz. questionnaires to doctors and patient caregivers were administered immediately after each session.

Results

Among the 360 patients enrolled in the study, 326 tele-consultations (91%) were successfully completed. This resulted in 186 patients (57.1%) avoiding a hospital visit through tele-screening including, 166 (50.9 %) patients screened positively for referral consultations, 11 (3.4%) patients advised with specific treatment and 9 (2.8%) patients given with health education. The doctors expressed satisfaction in 262 cases (80.4%) and 237 (72.7%) patient caregivers were satisfied with the effectiveness of care delivery. 277 (84.97%) patient caregivers stated their willingness to attend future tele-consultation sessions instead of an in-person consultation.

Conclusion

This study demonstrated the effectiveness of telemedicine as a screening tool for pediatric patients, with high success rate and ability to avoid hospital visits. Doctors and Patient caregivers' expressed satisfaction with tele-consultations, emphasizing communication quality and convenience. Tele-screening is effective for triaging in pediatric OPD.

P94

Title: Incidence, Risk Factors, and Outcome of Retinopathy of Prematurity in Outborn Infants

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Place of study: Newborn Unit of Pediatric Emergency, Advanced Pediatrics Centre, PGIMER, Chandigarh

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Ethics approval: The Institutional Ethics Committee of the Postgraduate Institute of Medical Education and Research, Chandigarh, approved the study protocol (IEC-INT/2022/MD-632, dated 06/09/2022).

Data availability: The data are available from the corresponding author. Deidentified data can be provided upon reasonable request.

Author Contribution

YA: Conceived the idea, recruited participants, and drafted the manuscript.

JK and DK- Data check, statistical analysis, manuscript review, and revisions.

PK, SD, and VS- Supervised patient recruitment and data collection

All the authors approved the final version of the thesis and will be accountable for all aspects.

P95

TITLE: A Quality improvement study to reduce central line-associated bloodstream infections in a neonatal intensive care unit in a tertiary care hospital in Karamsad Gujarat.

Bhushan Korde, Dipen Patel, Somashekhar Nimbalkar, Ajay Phatak.

Introduction:

Sick neonates in the neonatal intensive care unit (NICU) frequently need insertion of central lines placing them at high risk of contracting a CLABSI. Infections increase the risk of morbidity, mortality, medical costs, and hospital length of stay in the neonatal intensive care unit (NICU).

Aims and Objectives:

Improve adherence to the CLABSI maintenance Care bundle checklist from 70 % to 100% and reduce CLABSI rate from ~ 10 per 1000 central line days to < 5 per 1000 central line days in the NICU.

Material and Methods:

This quality improvement study was conducted at the neonatal intensive care of a tertiary care teaching institute over a period of 13 months using the Plan-Do-Study-Act (PDSA) principle. The monitoring unit has a 24×7 availability of MD pediatric, DM Neonatology residents and staff nurses. All the newborns requiring central line placement were included in the study. The analysis was performed using STATA (14.2).

Results:

Adherence to the CLABSI maintenance care bundles checklist improved significantly from 65 % to 100% in PDSA cycle 2 which stabilized to 99% in the sustenance phase. The Mean (SD) CLABSI maintenance care bundles checklist improved significantly in all PDSA cycles and remained stable during sustenance ($P<0.001$). CLABSI rate of 13.24 per 1000 central line days at the Baseline improved to 0 in PDSA cycle 2 and remained under control (4.85) in the sustenance phase.

Conclusion:

The current study resulted in increased CLABSI care bundle adherence and a reduction in CLABSI rate per 1000 central line days.

P96

I.Candidal Infections in neonates in a level 3 Neonatal Intensive Care Unit in Bangalore: A Retrospective Observational Study

Authors: Manjunath R1, Prathap Chandra2, Deepa Mohan Sharma2 , Amith Ahmad3,Nichal M3

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Abstract

The aims of this study were to evaluate the demographic characteristics, risk factors, role of preterm antifungal prophylaxis, clinical features, and laboratory findings of neonates with fungal sepsis in a level 3 Neonatal Intensive Care Unit

Methods

This retrospective single centre study included patients in NICU with Candida *spp* isolated in blood cultures between August, 2023, and September, 2024. The patients were evaluated neonates with Candida albicans and neonates with Candida non-albicans positive blood cultures.

Results

Candida infection was detected in blood cultures in 24 of 280patients admitted to the NICU. A total of 24 infants included in the study. Candida infection was determined 8.5% of infants in the study population, and 41.6% of them were extremely pre-term infants. Normal vaginal birth was determined at a higher rate , length of hospital stay, duration of total parenteral nutrition (TPN), and mechanical ventilation (MV) were observed to be longer in blood culture positive for candida spp. The mortality due to Candida fungemia was determined as 8.3%, and of these patients.

Conclusion

Study revealed increased rate of fungal sepsis in preterm neonates in our unit in neonates who are outborn and extremely premature, increased rate of mechanical ventilation, TPN requirement, increased hospital stay and poor weight gain and mortality was observed , preterm neonates on antifungal prophylaxis also developed fungal sepsis due to resistant strains which needs attention about raising anti-fungal resistance in neonatal units , which requires close observation and prevention strategies.

Keywords: Candida spp, candidemia, fungal sepsis, neonatal intensive care unit, nosocomial infection

P97

I. Prevalence and Outcome of Retinopathy of Prematurity in preterm infants in a single Tertiary care hospital-A Prospective observational study

Dr.S.Thangadurai, Prof.Dr.J.Ashok Raja , Prof.Dr.K.Kavitha

Dr.Thasneem Suraiya

Introduction

Retinopathy of prematurity is a vasoproliferative disorder of retina that can produce significant vision impairment in infants. Recent advances in neonatal management, have improved the survival rates of preterm babies.

Aims and objective

To estimate the prevalence of ROP in preterm infants and to assess the outcome of treated cases.

Material & Methods

A prospective observational study from July 2021 to June 2023 was conducted at a Tertiary care hospital in preterm newborn with <34weeks of gestational age and Gestational age of 34 to <37weeks with risk factors that predispose to ROP. ROP screening done at 4weeks of age. ROP babies were followed up regularly. At 1year of age, ROP treated infants examined for vision impairment.statistical analysis were done by using SPSS software.

Result

Totally 2654 preterm infants were screened and found to have ROP around 873(32.89%).Totally 55(6.3%)infants needed treatment.Laser treatment for 43(78.18%) and inj.AntiVEGF for 10(18.18%) and both for 2 (3.67%)infants. At one year followup,one infant died, four infant had loss of vision, two had refractive error, remainder showed no vision impairment.

Conclusion

Our study prevalence of ROP was 32.89%,which highlights the magnitude of the problem in preterm population. The incidence is likely to increase as preterm survive unless a parallel reduction in risk factors. However, on followup revealed loss of vision in (7.4%)infants. This study recommends timely ROP screening and effort to prevent preterm delivery,improvement in early detection of ROP markers to prevent serious sequelae of ROP.

P98

I. Measurement of self-efficacy of breastfeeding using simple tool BSES-SF tool in community using mothers own local spoken language

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Category: Community Neonatology

NNF Fellowship Number:TN/L-4146

Oral presentation

Abstract

Introduction: Adequacy of breastfeeding self-efficacy (BSES) is an important modifiable determinant of breastfeeding; a structured assessment is not available in local language Tamil. In this study Greek version of the Breastfeeding Self-Efficacy Scale (BSES-SF) to Tamil including its predictive validity in terms of Breastfeeding (BF) and Exclusive Breastfeeding (EBF) up to the sixth month was assessed.

Methods: Study was Prospective cohort study and study was done among 1000 mother-infant dyad. BSES was assessed 24–48 h after birth and at the first month and six months. The association between BSES and breastfeeding was estimated in logistic regression models and its diagnostic ability in ROC analysis.

Results: BSES was lower among low socioeconomic status, primiparas and those who delivered by Cesarean Section (C/S). There was good internal consistency across the 14 items scored in local language Tamil. BSES scores were higher among mothers who initiated exclusive breastfeeding early (3.05± 0.70) compared to breastfeeding not exclusively (4.19± 0.61) and not breastfeeding (6.09± 0.09; p-value < 0.05). Women in the upper quartile of BSES at 72 h were more likely to breastfeed exclusively by OR = 3.3 (95% CI 1.7–17.1) and OR = 10.3 (95% CI 2.7–68.6) at the 6th month. High first month BSES had 78.1% positive and 86.6% negative predictive value for breastfeeding at 6 months which reflects higher sensitivity but lower specificity.

Conclusion: The BSES-SF showed good metric properties and it can be considered a valid and reliable measure of breastfeeding self-efficacy among new mothers in local language so that it can be used in community level.

Key words: exclusive breastfeeding, breastfeeding efficacy, community level

P99

I. ABSTRACT- Free paper

TITLE- QUALITY IMPROVEMENT INITIATIVE TO IMPROVE HYGIENIC HANDRUB COMPLIANCE IN A TERTIARY CARE NEONATAL UNIT

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Background- Hand hygiene forms the core for effective infection prevention and control programmes. In critical care settings, compliance is 60% worldwide with 9% in low-income countries. This large difference urges updating and strengthening hand hygiene promotion programmes worldwide. Chengalpattu medical college has an 18 bedded level 3 care setup and the baseline hand hygiene compliance was 36ml/baby/day. Chengalpattu medical college has an 18 bedded level 3 care setup and the baseline hand- hygiene compliance was 36 ml/baby/day. In WHO hand hygiene self-assessment framework we scored BASIC level.

Objective- To increase handrub compliance from 36 ml/baby/day to 84 ml/baby/day in level 3 NICU.

Method- After baseline assessment, the implementation phase was carried out over 6 months and maintenance phase for 2 months. Average of 20 opportunities and 120 ml/baby/day was estimated with CCTV surveillance. Achieving 70% of target (84ml) was kept as target for the study. QI team comprising healthcare workers were formed. The potential barriers were analysed using fishbone analysis and WHO multimodal implementation strategy was adopted using PDSA cycles. Interventions include availability and accessibility of handrub, training for healthcare workers to increase skill and knowledge, reminders in place, skin care measures, surveillance & motivation, facility team leader's commitment.

Result- At the end of implementation phase, the compliance rate increased above 90 ml/baby /day and was able to sustain in maintenance phase. Run chart was used to depict the weekly improvement in compliance. the intervention found most useful was ensuring availability of handrub at all places, skin care measures and direct surveillance with feedback.

P100

I. Multidrug- Resistant Organisms Colonization in NICU: a retrospectiive nested case control study

Introduction:

Active surveillance programs are essential for reducing multidrug-resistant organisms (MDRO) in NICUs. Identifying risk factors and outcomes can improve care and prevent the spread of MDRO.

Objectives:

To compare the risk factors and outcomes of MDRO colonization in NICU babies.

Methodology:

A retrospective nested case-control study was conducted at a tertiary hospital in Karnataka over 12 months (January 1 – December 31, 2023). In our NICU, weekly screening of NICU babies for MDRO (surface and rectal swabs) is a routine. MDRO colonized babies were cases; controls were gestational age (GA), birth weight matched NICU babies not colonized by MDRO. Risk factors and outcomes were compared in both groups. Sample size calculated was 47 in each arm. Data were analysed using SPSS 29.

Results:

Among 772 NICU admissions, a total of 1236 swabs identified 56 MDRO cases. The most common organisms were Klebsiella pneumoniae (43%), Escherichia coli (38%), and Acinetobacter baumannii (13%). Mean GA and birth weight were 34.69±3.69 weeks and 2188±808.8 g respectively. MDR babies had lower APGAR scores, fewer were breastfed in the first hour (21.4%vs44.6%), more received IV fluids(50%vs11%), TPN (32%vs9%), antibiotics(64%vs23%), surgery(9%vs0%)) and ventilation (36.6%vs44.2%) ($p<0.05$).

Both early/late onset sepsis and pneumonia ($p=0.004$) were more frequent in MDR babies. MDR babies had longer hospital stay (27.55±26 vs. 12.7±12 days, $p=0.0002$). There was no difference in death or discharge-against-medical-advise (DAMA).

Conclusion:

MDRO colonized babies had higher interventions (IVF, TPN, ventilation, surgery), sepsis and had longer hospital stay. Mortality and DAMA rates were similar.

P101

ABSTRACT: Comparison of Effectiveness of 7 days vs. 14 days course of intravenous antibiotics in the treatment of Uncomplicated Neonatal Bacterial Sepsis: A Randomized Controlled Non- Inferiority Trial

Background and Aim: There is no evidence regarding the requirement of 14-day antibiotics in uncomplicated culture-positive bacterial neonatal sepsis, although guidelines recommend 14 days of therapy. We aim to compare the treatment outcomes of neonates with uncomplicated culture-positive sepsis treated with 7-day and 14-day intravenous antibiotics.

Materials and methods: The trial was conducted in the NICU at AIIMS Raipur, India, from 2022 to 2024. We included neonates, >1000g with suspected sepsis in which antibiotics were initiated, excluding those with complicated sepsis. Neonates who improved clinically were randomized into either group on day seven of sensitive antibiotics and followed for 35 days after antibiotic completion.

Results: Of the 417 neonates with suspected sepsis, only 121 (28%) came blood culture positive, out of which 62(51.2%) with uncomplicated sepsis were randomized. Baseline characteristics were similar in both groups. There was 1 suspected relapse in 14 days, within 7 days of completion of the antibiotic, with 3 losses to follow up. The median duration of stay in 7 days was 8 (8–14) days, which was significantly less ($p<0.01$) as compared to that in 14 days was 18 (14–21) days. Both groups were comparable regarding the oxygen requirement- non-invasive ($p=0.75$), invasive ventilation ($p=0.58$), and inotrope ($p=0.22$) support. There was no mortality or serious adverse effects in either group.

Conclusions: 7 days of antibiotics in culture-positive, uncomplicated bacterial neonatal sepsis is as good as 14 days of antibiotics with respect to primary outcome i.e. relapse with a shorter duration of hospital stay, but a larger multicentric trial is required.

P102

Unravelling milky serum in neonates- Tertiary SNCU perspective-case series

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Category: Endocrinology

NNF Fellowship Number: TN/L-4146

Oral presentation

Introduction: Familial hypertriglyceridemia is a rare condition occurring in around 1% of population. Plasma triglyceride levels are a measure of TG rich lipoproteins and their metabolic remnants which are derived either from diet or produced by liver. This study is the first study in India with 4 case series.

Aims& Objectives: Case series ofnewborns admitted with milky serum &confirmed as hypertriglyceridemia were presented along with varied management modalities were advocated.

Materials & methods: Totally 4 babies admitted with hypertriglyceridemia with milky serum in Institute of Child Health, Egmore, Chennai during year2020-2022 were included in our study.

Results:

Neonate 1:13day-old full-term girl baby presented with jaundice, was found to have highly viscous & milky serum. Genetic testing confirmed homozygous GP1HBP1 exon 4 homozygous mutation. The baby put on skimmed milk, MCT oil & iron supplements.

Neonate 2. Term 27day old newborn, came with complaints of bleeding per rectum, while being investigated, milky serum noted, & diagnosed as hypertriglyceridemia (6286mg/dl) genetically proven LPL gene mutation. Discharged on skimmed milk, MCT oil supplementation.

Neonate 3. 25day old newborn, with triglycerides level 41,650mg/dl, proven lipoprotein lipase deficiency, hypertriglyceridemia. Exchange transfusion was done. Baby was discharge on skimmed milk.

Neonate 4. Term baby born to primi mother oat 15th day of life with features suggestive of sepsis. Clinical exome sequencing showed missense mutation in GP1HBP1 gene homozygous variant conforming the diagnosis.

Conclusion: Hypertriglyceridemia being very rare entity but early diagnosis and initiation of treatment had better prognosis.Serial monitoring of triglycerides is required to anticipate the complications.

Key words: Milky serum, newborn, hypertriglyceridemia,exchange transfusion,mutation.

P103

BACTERIOLOGICAL PROFILE IN COMMUNITY ACQUIRED PNEUMONIA IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction: Community acquired pneumonia (CAP) refers to clinical signs and symptoms of pneumonia acquired outside a hospital setting .

Methods and Material: It was a prospective study conducted at department of Paediatrics, ACS Medical College and Hospital, Chennai for a period of 1 year on children with community acquired pneumonia admitted in ward and PICU. Total 60 cases were enrolled in the study according to recent WHO guidelines of community acquired pneumonia. Oropharyngeal swab and blood culture samples were collected from every child and sent for culture and sensitivity.

Results: Out of 60 cases, 43 (71.6%) were diagnosed as pneumonia and 17 (28.4%) were as severe pneumonia. On blood culture only 11 (18.3%) had positive growth and on oropharyngeal swab culture 14(23.33%) had growth. Microorganisms isolated in blood culture were predominantly Staphylococcus aureus, while in throat swab culture Streptococcus predominated.

Conclusion: The overall rate of isolation of organism in CAP is low. The yield of culture positivity was 23% in throat swabs, with Streptococcus pneumonia being most common isolate, whereas 18% in blood culture with Staphylococcus aureus being predominantly isolated organism.

Key words: CAP, Blood culture, Oropharyngeal swab culture.

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P104

Implementation of an ideal newborn nesting position in NICU and study its neuro-behavioral correlation before and after a Quality Implementation Initiative (QI)

Introduction

Appropriate nesting and positioning of neonates using the standardized Infant Positioning Assessment Tool (IPAT) can enhance positioning consistency and improve neurobehavioral responses.

Objective

To achieve ideal positioning in NICU infants, increasing from a baseline of zero to 50% over a 3-month period through quality improvement (QI) methods.

Methodology:

Conducted in a tertiary care hospital on hemodynamically stable infants (GA 28–40 weeks). Data on IPAT scores, Neonatal Neurobehavioral Assessment (NBNA) scores, and physiological stress indicators—heart rate (HR), respiratory rate (RR), and oxygen saturation (SpO2) variability—were collected from 61 infants each before and after QI efforts targeting over 50% ideal IPAT positioning over 2.5 months each. IPAT scores were classified as: 12 (ideal), 9-11 (acceptable), and <8 (repositioning). NBNA scores were categorized as normal (≥36), suspect brain injury (35-36), and definite brain injury (≤34). QI team implemented seven Plan-Do-Study-Act (PDSA) cycles, including training, skill demonstrations, reminders, laminated IPAT sheets, and improved nesting and feedback.

Results

Mean gestation and weight were 35.4±3.1 weeks and 2537.5±761 grams, respectively. Ideal IPAT score improved from 0% to 75%, with the overall score rising from 5.86±1.76 to 11.62±0.637 ($p<0.0001$) and significant improvements were noted in physiological stress indicators ($p<0.001$) across all gestations. NBNA scores changed from 36.86±1.36 to 36.7±1.31, while normal grading increased from 57.4% to 61% ($p=0.796$). Infants >37 weeks showed significant improvement in NBNA (36.8±1.29 to 37.7±1.096, $p=0.04$).

Conclusion:

QI initiative improved IPAT scores, leading to ideal positioning and reduced physiological stress indicators. It also enhances neurobehavioral responses in near-term infants.

P105

ABSTRACT FOR NNF

Time to blood culture positivity as a predictor of mortality in neonatal sepsis.: An observational study

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Introduction: Time to positivity(TTP) is defined as the time from the start of incubation to the preliminary positive result of blood culture. A shorter TTP implies a higher bacterial load.

Aims and Objectives: We aimed to evaluate the association between mortality and TTP in neonatal sepsis (NS), our primary outcome. Secondary outcomes were median duration of TTP, pathogen profile isolated from blood in NS.

Methods: This retrospective study included 60 cases of blood culture positive isolated in 10-month period (November 2023-August 2024). Clinical, microbiological and TTP were noted from medical records. Data was analysed by SPSS version 27. Association between mortality and predictors (gestational age, day of onset of NS, gender, TTP, and pathogen) was assessed by multiple logistic regression analysis.

Results: Of the neonates studied, mean GA was 32.2± 4.2 weeks of which majority were males (60%). Median birth weight was 1295g. Majority of the cases were late onset neonatal sepsis (52; 82.7%). Most common organism isolated were gram negative bacteria (GNB) (40; 66.6%), followed by Gram positive cocci (12;20.0%) and rest were Candida *spp.* Median duration of TTP was 20.5 (17.0 – 42.0) hours. Twenty-nine (48.3%) neonates expired and only significant predictor of mortality was isolation of GNB.

Conclusions: TTP in blood culture had no predictive ability to sepsis related mortality in our unit.

P106

EXTRAUTERINE PLACENTAL TRANSFUSION - FEASIBILITY STUDY IN PRETERM INFANTS LESS THAN 32 WEEKS

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INTRODUCTION:

Placental transfusion involves transfer of residual placental blood to the baby during 1st few minutes of life and is accomplished by delayed cord clamping (DCC), intact (I-UCM) and cut-umbilical cord milking (C-UCM). Kuehne et al described a novel extra-uterine placental transfusion (EPT) approach in which both initiation of CPAP support and placental transfusion were done at the same time.

AIMS AND OBJECTIVES

The objective was to determine the feasibility of the EPT for placental transfusion in delivering the placenta with intact cord and thermoregulation.

MATERIALS AND METHODS

In EPT, infants born by c-section with the placenta still attached via the umbilical cord . Placental transfusion is initiated with CPAP support and placenta held 30-40 cm above the infant.The cord was clamped and cut once it is visibly collapsed with a stable HR and oxygen saturation based on Dawson nomogram

This study is one component of a RCT comparing EPT and DCC influence on hematocrit and other composite adverse outcomes.

RESULTS

Of the 2 infants (GA <32 weeks) studied the mean time for placental separation is 2 minutes and Average cord clamping time is 330 sec . The placental weight difference after transfusion is 10 g. Both babies were hemodynamicacally stable with normothermia . A rise in Hb and Hct at 24 hours was observed with no adverse composite outcomes and transfusion required in infatns studied .

CONCLUSION

In conclusion EPT is feasible in preterm infants and can be a better alternative to PBCC in resource limited settings

P107

I. Can Quality improvement interventions reduce the occurrence of invasive candidiasis in a neonatal intensive care unit of an Indian government district hospital?

Dr Laxmi Kamath , Dr Shradha, Dr Nutan Kamath

ABSTRACT:

Introduction : Blood stream infections (BSI) due to *Candida* species in the neonatal intensive care unit (NICU) are less frequent than that due to Gram-positive or Gram-negative bacteria. However, it is associated with higher morbidity and mortality rates. Among newborns with a birth weight < 1000 g and extreme prematures <28 weeks, 4–8% will develop candidemia. This cohort has about 30% mortality. Simple quality improvement (QI) measures including healthcare personnel's behavioural changes are proven to reduce sepsis in NICU.

This project was undertaken to evaluate risk factors in our NICU for fungal sepsis and address them as quality improvement interventions.

Aim: To reduce the occurance of invasive neonatal candidiasis from 15% to <2% using quality improvement initiatives over six months.

Methodology: Using Plan-Do-Study-Act (PDSA) quality improvement methodology, we did a baseline analysis of all risk factors causing invasive candidiasis in neonates in our NICU in a predesigned proforma. A fishbone analysis was done to identify risk factors like the antibiotics used, use of central lines, delayed start of enteral feeds, lack of fluconazole prophylaxis in high risk preterm. We then implemented evidence-based interventions to address the risk factors and same continued till occurrence of invasive candidiasis dropped below 2%.

Results: Incidence of Neonatal candidiasis dropped from 15% to 1% in 4 months. As central line usage was also strictly monitored, usage of central lines also dropped from 42% to 12%. Proportion of early trophic feeding increased from 0% to 98%. Complete Hand hygiene adherence rates increased from 30% to 95%.

Conclusion: The frequency of invasive Candidiasis in neonates was successfully reduced by introducing PDSA study methodology as a QI initiative. A team-based approach and provider education ensured high compliance. As every risk factor was addressed, the results were achieved quickly.

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EFFECT OF MATERNAL AUTOIMMUNE DISEASE ON NEWBORNS: A HOSPITAL BASED HISTORIC COHORT STUDY.

ABSTRACT.

Authors name – Dr Deepthi S M, Dr Suman Rao P.N Dr Shashidhar A, Dr Bharathi B

Place of study – Department of Neonatology, St John's Medical college and Hospital Bengaluru.

Introduction – Autoimmune disease frequently complicates the pregnancy with preeclampsia, HELLP. Transplacental passage of auto antibodies affects the foetus resulting in prematurity, thrombotic events. A careful vigilance is required for the pregnancy complicated by autoimmune disorders.

Objective –To study the maternal characteristics and of newborns born to the mother with autoimmune disorder in comparison to normal pregnancy.

Method – Historic cohort study was conducted, where in all mothers with APLA/ANA positive from past 4 years (2019 to 2023) were identified from the NNPD register and were compared with normal controls matched by maternal age and time of birth at 1:3 ratio. 28 newborns with maternal autoimmune disease and 84 controls were identified. Maternal characters studied for: number previous abortions or still births, presence or absence of preeclampsia, HELLP and gestational diabetes. Newborns were studied for gestational age at birth, birth weight, and presence of thrombocytopenia, congenital heart block, intra-parenchymal bleed, seizures, renal failure, anaemia, and duration of hospital stay.

Data were analysed using t test and chi square test.

Results – Total of 28 cases and 84 controls were identified. Maternal baseline characteristics in terms of age were matched. APLA positive or SLE diagnosed mothers had significantly increased number of preterm babies or LBW(p value of 0.0001 and 0.0012 respectively; CI -95%). Other features such as thrombocytopenia, intra-parenchymal bleed, duration of hospital stay were increased and statistically significant.

Conclusion – Mothers with APLA/SLE have higher preterm delivery and LBW infants. Problems such as thrombocytopenia, intra-parenchymal bleed were significantly higher.

P109

Optimizing Mothers Own Milk for our Very Preterm Infants: A Quality Improvement Initiative

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Subcategory: Quality Improvement.

Introduction:

Mothers Own Milk reduces complications like NEC and BPD. In our hospital, 14 out of every 1,000 live births are very preterm, and 73% among them experience EUGR due to suboptimal nutrition. By day7 preterm babies need 180ml/kg/day to meet their energy needs, and the 24hr milk volume on day7 to predict long term adequacy was 407ml. But median milk volume on day7 was 166ml(99ml/kg/day) highlighting significant deficit. This has led us to initiate quality improvement efforts to enhance MoM supply for these vulnerable babies.

Aim & objective: To increase the median day7 MoM from 166ml to 407ml over 12months period.

Materials & methods: The implementation phase was from March to September2024. All stable mothers were enrolled. QI team with staff nurse, lactation nurse, resident doctors and consultant analyzed potential barriers using fishbone analysis and identified possible interventions. Priority matrix was formed to decide sequence of changes. The following measures were subsequently tested by PDSA cycles. Antenatal education, knowledge about technique of expression, mother infant bonding, domperidone, documentation of MoM volume in case sheets & rewards for mothers.

Result:

Total 86mother infant dyads were recruited. By 10months, the median MoM volume on day7 reached to 404ml from baseline 155ml. The median time of first milk expression decreased to 3hrs. Daily expression frequency and night expressions increased significantly. Antenatal education and mother infant bonding were most effective.

Conclusion:

This Quality improvement initiative demonstrates the effectiveness of multimodality approach using targeted intervention and ongoing evaluation.

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Category: Infectious diseases (ID)	**Mode of presentation:** Poster

Burden of multidrug-resistant neonatal sepsis in level-II newborn units of district hospitals in India

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Word count: 379

Abstract

Introduction: While sepsis epidemiology has been adequately reported from tertiary care hospitals, there is a lack of data from district hospitals (DH) in India.

Aims & objectives: To evaluate the incidence of sepsis, pathogen profile, and antimicrobial resistance (AMR) patterns among neonates admitted to these facilities.

Methods: We prospectively enrolled neonates admitted to special newborn care units (SNCUs) in five DHs across India between October 2019 and December 2021. Blood cultures were obtained from neonates who met prespecified sepsis criteria and processed at the microbiology laboratories of the tertiary care hospitals linked to each DH. Identification of isolates and

antimicrobial susceptibility testing was performed using the automated (VITEK 2) system; all isolates were later confirmed using matrix-assisted laser desorption/ionization-time of flight (MALDI-TOF) at the nodal center. The final label of culture-positive sepsis was assigned based on culture reports and clinical course. Multidrug resistance was defined as resistance to antibiotics in at least three of the following classes: 3rd generation cephalosporins, carbapenems, aminoglycosides, fluoroquinolones, β-lactam/β-lactamase inhibitors, and polymyxins.

Results: We enrolled 6,612 neonates (3,972 inborn and 2,640 outborn). The mean gestation and birth weight were 37·1 weeks and 2540 g, respectively. Half (3357; 50·8%) of the enrolled neonates met clinical sepsis criteria. The incidence of culture-positive sepsis was 3·2% (n=213; 95% CI: 0·6–14·4); it ranged from 0·6% to 10·0% among the five sites. The incidence was higher in outborn than inborn neonates: 5·0% vs. 2·0%. 58% of the neonates had sepsis onset within 72 hours of life (early-onset). The case-fatality rate of culture-positive sepsis was 36·6% (78/213; 95% CI 12·1–71·0). Gram-negative bacilli accounted for 70% of organisms isolated: *Klebsiella* spp (24%), *E coli* (15%), and *Enterobacter* spp (12%) were the most common Gram-negative organisms. 77% to 88% of isolates of *Klebsiella* spp*, E coli, Enterobacter* spp, and *Acinetobacter* spp were multi-drug resistant.

Conclusion: The high incidence of culture-positive sepsis, case-fatality rates, and multi-drug resistance among common Gram-negative pathogens underscores an urgent need to strengthen infection prevention and control practices, establish blood culture facilities for reliable diagnosis, and implement antimicrobial stewardship programs in district-level hospitals in India.

Funding: This work was funded by the Bill & Melinda Gates Foundation.
Keywords: neonate; sepsis; gram-negative bacteria; antimicrobial resistance; district hospitals

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Background. The aim of the study was to reduce the rate of packed RBC transfusion in preterm neonates. All preterm babies < 32 weeks admitted to NICU at birth were included Methods. The study had 3 periods - Baseline data collection, Plan-Do-Study-Act (PDSA) cycle I and PDSA cycle II . Our primary outcome was number of PRBC transfusions till term gestation . During the baseline period, patient baseline data were collected. Anemia prevention bundle included,judicious use of investigations,clubbing of investigations,iron and vitamin supplementation All planned investigations were clubbed together . All emergency investigations were done after filling up of necessary justification. Anemia prevention bundle adherence was documented using anemia prevention bundle forms and feedback forms.During phase 1 anemia prevention bundle was introduced ,educational activities where conducted regarding exact amount of blood needed for each test . Investigations were clubbed Iron and multi vitamin supplementation was optimized. Mean hemoglobin levels at term and transfusion data was collected In second cycle changes were reinforced with monthly educational activities The bundle check list was incorporated in to the case records along with justification for investigations in the non-routine hours Data was entered into Microsoft Excel spread sheet, cleaned and analysed using appropriate statistical package. Results. The implementation of anemia prevention bundle made a statistically significant reduction in transfusions(37%)in neonates with gestational age less than or equal to 30 weeks (p0.001). The reduction in excess blood loss can be achieved by use of marked tubes and proper instruction of the nursing staff and doctors

P112

Title- Polymerase chain reaction in neonatal meningitis –a prospective observational study

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ABSTRACT

Introduction: Appropriate management of neonatal meningitis requires identification of the microbe. The low microbe detection rate on Cerebrospinal fluid (CSF) culture makes it less useful. Diagnostic utility of CSF cytology and biochemistry are inconclusive. Polymerase chain reaction (PCR) has advantages of higher detection rate and early turnaround time. There are limited prospective studies on use of PCR in neonatal meningitis.

Aims and Objectives: To describe the proportion of neonates with a negative CSF PCR among those with a negative CSF culture.

Also, to compare short term outcomes (survival, neurologic status by 4 months of age) between babies with negative CSF PCR and total cohort of culture negative CSF.

Materials and Methods: All babies who were CSF culture negative were eligible. CSF analysis results (cytology, biochemistry and PCR) and clinical outcomes (survival and Denver II development assessment at 4 months) were collected prospectively.

Results: Among 78 babies with CSF culture negative, 57 (73.1 %) had PCR also negative for bacteria.

No differences in survival rates (98. 2 vs 97.4 %), normal development at 4 months (64.7 vs 66.7 %) were noted between babies with PCR negative and total cohort of CSF culture negative. Abnormal CSF sugar values were more common in PCR positive babies (28.6 vs 11.1, p=0.07). Traumatic CSF was significantly associated with abnormal cytology.

Conclusion: A significant proportion of babies had CSF PCR negative when their culture was negative. PCR may be a valuable adjunct in excluding meningitis. The PCR may be of greater value in settings of traumatic CSF.

Keywords: Neonatal meningitis, CSF PCR

P113

Dissecting the brouhaha: Feed intolerance among preterm neonates fed Pasteurized donor human milk Versus Formula, in early life – A Retrospective study.

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Abstract:

(a)Introduction: Mother's own milk (MOM) is best for the baby. But there are occasions when MOM is insufficient to meet needs. Pasteurised donor human milk(PDHM) and preterm formula(PF) are other options for enteral feeding. Premature infants fed with PDHM appear to have lower risk of necrotizing enterocolitis (NEC), however there are not enough human milk banks across the country. Moreover, PDHM is associated with slower growth and lacks immunological benefits of MOM. **(b)Aims & Objectives**: To study the proportion of neonates with feed intolerance in the first 2 weeks; in preterm neonates (≤30 week/ ≤1.2 kg) fed with PDHM versus Formula feed. Secondary objectives were comparing days to full oral feeds and episodes of sepsis and/or NEC between the two groups. **(c)Materials & Methods**: This retrospective study included preterm neonates with birth gestational age of ≤30 weeks. Two groups were compared: those who received PDHM versus those who received PF whenever MOM was insufficient to meet prescribed feed volumes. **(d)Results:** Amongst included neonates, 83 received PDHM; and 41 received PF. Feed intolerance was noted in 20% in PDHM group versus 24% in PF group (p= 0.619). NEC and culture positive sepsis were not different. Median duration of PDHM use in the first 2 weeks was 5 days. The PF group reached full enteral feeds earlier [13(11,15) days versus 15(11,15); p=0.006]. Periviable neonates received exclusive MOM. **(e)Conclusion:** Feed intolerance in PF neonates was not higher than those who received PDHM. Clinicians must make informed decisions when MOM/PDHM is not available.

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VITAMIN C DEFICIENCY MIMICKING OSTEOMYELITIS / SEPTIC ARTHRITIS IN AN EXTREME PRETERM INFANT – A CASE REPORT

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Introduction : Scurvy is a rare disease in newborns as the fetus receives Vitamin C from the placenta and has stores of vitamin C after birth. Infantile Scurvy can occur due to prolonged deficiency. Here we present a case of a 3month old extreme preterm infant with multiple bony swellings & pathological fractures and low Vitamin C level.

Aims and Objective : To elaborate on the rare clinical presentation of a 3month old extreme preterm infant with signs of Vitamin C deficiency.

Materials and Methods : An extreme preterm ,delivered at 23+2 weeks of gestation in a Tertiary Care hospital , with ongoing NICU care presented at 3months of age with multiple joint swellings and excessive irritability. Relevant laboratory , radiological and nuclear imaging of the bones were studied.

Results : Bone profile (Calcium, Phosphorus and ALP) was not suggestive of metabolic bone disease. Inflammatory markers were negative. Serial X-rays and FDG PET CT scans showed metaphyseal widening in all long bones of bilateral upper and lower limbs .Pelkan spurs with fractures in distal left humerus and femur with periosteal reaction in bilateral humeri and femurs (L>R) –features suggestive of Scurvy . Serum Vitamin C level was done as there were radiological signs of Scurvy. Vitamin C level (even after initial few doses supplemented) was reduced-0.39mg/dl (Normal range -0.40-2.00) . X-rays repeated after 1 week of Vitamin C therapy showed signs of fracture healing .

Conclusion : Vitamin C deficiency although rare ,can mimic septic arthritis /osteomyelitis in preterm infants. Early identification and treatment can reduce complications and improve bone health.

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THE ROLE OF INTERLEUKIN-6 IN THE EARLY DIAGNOSIS OF SEPSIS IN PREMATURE INFANTS

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Category: Infectious diseases

NNF Fellowship Number: TN/L-4146

Oral presentation

Abstract

Introduction: Septicemia is one of the major causes of mortality and morbidity in newborns. Evidence shows that increasing in IL-6 level can occur earlier than CRP and it can be used as a good index in early sepsis diagnosis compare than CRP.

Aims & Objectives: To find out whether IL-6 can be a valid marker for predicting neonatal sepsis and early diagnosis of sepsis in neonatal care units

Methods: This cross-sectional study was conducted on 31 premature infants admitted to the neonatal intensive care unit (NICU) during the first week after given birth. For all premature infants, blood culture was done in admission and CBC, IL-6.CRP experiments were checked until 7 days after birth. Collected data analyzed by statistical methods and all statistical analysis were performed using SPSS.21. The $P<0.05$ was considered statistical significant.

Results: Among all infants, 15 (48%) were girl and 16 (52%) were boy. The mean length of hospitalization in the boys and girls were 10.3 and 9.4 days, respectively. The average of absolute value of neutrophils in the first, neither third and seventh days after hospitalization was significantly higher than nor mal. The changes at IL-6 levels was significant ($P=0.005$), so that these rates in the seventh day compared to first and third days were 76.2% and 70.4%, respectively .The changes at Neutrophil amounts during study times was significant ($P=0.009$), so that these rates in the seventh day compared to first and third days were 63.2% and 19.7%, respectively.

Conclusion: Results showed that IL-6 can be a valid marker for predicting neonatal sepsis and be considered as a good tool for early diagnosis- sis of sepsis in neonatal care units compared to CRP.

Key words: Sepsis.CRP,Neurophil count

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Background: More than 90% of neonatal intensive care units (NICUs) in India are in urban areas, denying rural residents easy NICU access. Telemedicine use for patient contact and management, although studied in adults and children, is understudied in neonates. A hybrid telemedicine system, with 24/7 remotely neonatologist & neonatal nurse practitioner coverage and with a neonatologist physically present during morning and evening round and telemedicine coverage the remaining days, was recently implemented at Level II NICUs .

Objective: To compare the results of moderately sick newborns between 30-36 weeks gestational age (GA) handled by our hybrid telemedicine program in Peripheral Hospital(PH) where has limited medical services, with those of comparable neonates getting standard medical treatment in a Level 4 NICU at Motherhood Hospital(MHI) Bangalore.

Methods: This was a retrospective, non-inferiority research that compared neonatal outcomes using hybrid telemedicine vs stranded medical treatment. Included were all GA newborns hospitalized between July 2023 and June 2024 who were 30–36 weeks gestation. Geographically speaking, newborns in both hospitals are similar. Infants in need of advanced specialized services or extended mechanical breathing were not included. The length of stay, the type and duration of respiratory support, the duration of antimicrobial medication, and the time to reach full enteral feedings were the outcome elements.

Results: The investigation comprised 180 infants at MHI and 130 neonates at PH. Neonates at MHI attained complete enteral feedings earlier, had shorter hospital stays, fewer days requiring supplemental oxygen, and fewer days requiring noninvasive respiration support than those at PH.

Conclusion: Providing neonates in medically deprived locations with intensive care using a hybrid telemedicine system is a safe and sustainable approach.

Keywords: telemedicine, Preterm, short hospital stay,e-NICU

P117

Data must drive policy: Critical care resource utilisation and outcomes of neonates born at 22-28 weeks of gestation: A prospective observational study

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Introduction: Information on outcomes of extreme preterm neonates, especially those born at thresholds of viability would aid parent counselling,drive policies and help plan resource-allocation. Conviction to institute best practices for fetal and neonatal well-being in these small gestations would affect outcomes. We recently adapted a joint, pro-active approach to management of 22-23 weeks gestation deliveries with targeted protocols. **Aim&objectives:** This study was planned to analyse survival of extreme preterm(22-28weeks)and their specific resource utilisation. Subgroup analysis for 22-25 weeks (periviable) was separately intended **Materials&Methods:** Relevant clinical data were collected prospectively.**Results:** Of 80 neonates born with this gestation 68 babies were analysed. Six families opted for comfort care at 23 weeks. Overall 72.1% of 22-28weeks were discharged home. Survival rates was 42.9% at 22-25weeks;and 92.5% at 26-28 weeks. From previous *nil survival at 23 weeks*, the revised policy led to *50% success rate.* Resource utilisation of 23 to 25weeks was high at median duration of respiratory support was 85(72,91) days. **Conclusion**: Good survival outcomes in extreme preterm infants suggests that intensive care must be indeed offered to these neonates (>90% in 26 weeks and above). Uniform fervour and positive outlook is required to change attitude to care of periviable pregnancies. Our prospective study on outcomes for distinct small gestations could serve as guidance for clinicians' protocols, counselling of parents, improve preparedness, resource allocation and aid policy decisions.

Key word: critical resource utilisation

P118

Title: **Diagnostic approach to neonatal cholestasis**

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PLACE OF STUDY : INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN,EGMORE.

Background: Cholestasis is failure of bilirubin secretion, resulting in conjugated hyperbilirubinemia and jaundice. There are numerous causes, which are identified by laboratory testing, hepatobiliary scan, and, sometimes, liver biopsy and surgery. Genetic analysis should be done to rule out familial causes.

Case details:

A 24 days old male child 3rd born of 3 degree consanguinous marriage ,full term, delivered by normal vaginal delivery, cried at birth with no post natal events brought by her mother with complaints of vomiting for 3 days ,yellowish discoloration of urine and blackish discoloration over buttock and pale colored stools for 3 days. Initial investigations revealed neonatal cholestasis with raised liver enzymes altered coagulation profile and bilirubin levels , low gamma glutamyl transpeptidase and ultrasound abdomen was normal. Previous history of sibling death present due to jaundice and parents were carrier for the disease. Hence genetic analysis was done. Genetic analysis shows mutation in ABCB11 . Child was managed with supplemental nutrition and fat-soluble vitamins and advices to do liver transplant for long term survival.

Discussion

PFIC2, caused by mutations within the ABCB11 gene and located on chromosome 2 with incidence of about 1in 50000 to 100000.It encodes for a bile salt export pump (BSEP). This protein is responsible for the export of bile salts into the bilious fluid and prevents adequate bile salt concentration within the bile and causes a buildup of bile salts within hepatocytes. This results in overload within the hepatocellular system leading to eventual destruction and architectural damage within the liver.

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"A study on parental stress anxiety depression and their participation in providing Family centered care in NICU"

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Abstract

Background

This study is aimed to study the levels of stress anxiety and depression among fathers and mothers while providing family centered care in sick neonates admitted in Level 3 NICU of south India.

Methods

This is a cross-sectional study conducted in out-born unit of Madras medical college located in south India**.** This NICU is open for mother at any time and for only during counseling time for the fathers. The following scales viz Parental stress – Parental Stressor Scale in NICU PSS: NICU, Parental depression – Edinburg Postnatal Depression Scale (EPDS), Parental Anxiety – State Trait Anxiety Inventory (STAI), Parental Participation – Index of Parental Participation (IPP) was assessed in both fathers and mothers at day 7 of admission. Difference between mothers and fathers was assessed by Moods median test for continuous variable and Z test for discrete variable.

Results:

150 parents (95 mothers and 55 fathers) were enrolled. Mothers reported significantly higher median scores for stress (3.5 vs 2.9, P<0.01) and trait anxiety (39 vs 35, p=0.030) and higher depression rates (EPDS ≥12: 49.5% vs 25.0%, p<0.01). 'High stress' (PSS: NICU ≥3) was reported by 55% of mothers compared with 32% of fathers (p=0.050). The frequency of the three conditions simultaneously was significantly higher among mothers (35.0% vs 12%, p=0.045), with the majority of mothers (82.0%) suffering from at least one condition compared with less than half of fathers (52%, p<0.020). Participation in care was more frequent in mothers (median score: 22 vs 13, p<0.01).

Conclusions:

Routine screening for mental distress among parents of neonates admitted in NICU is essential to provide effective family centered care. Special attention to gender differences is required to provide customized support and foster collaboration with the families of these high-risk neonates. Healthcare professionals working in the NICU should receive training on screening, preventing, and managing parental mental distress as a fundamental part of managing a sick newborn.

P 120

Finding the Optimal Predictive Model for Mortality in Out-born Neonates: A Retrospective Cohort Investigation

AUTHORS

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BACKGROUNGD The outcome of sick neonates' transportation is significantly predicted. It is possible to optimize outcomes and provide appropriate care when the sickest babies are promptly identified. As of yet, no ideal scoring scheme has been found.

Aim: To determine a quick, reliable, and simple-to-use score that may be used to predict neonatal mortality in outborn neonates.

Material and methods: Between January 1, 2024, and June 31, 2024, all newborns admitted by transfer to MOTHERHOOD Hospital Bangalore, a level 4 neonatal facility, were included. Infants with congenital critical abnormalities were excluded . The following variables were collected from medical records and tested for their association with mortality, including in subgroups (preterm vs. term infants): gestational age (GA), birth weight (BW), Apgar score, place of birth, time between delivery and admission (AT), early onset sepsis, and sick neonatal score (SNS). GA, BW, and AT, P^H, Lactate,Base excuses(BE) were used to develop MSNS-GAT score, to improve mortality prediction. Predicting death from all causes was the primary result. Cox regression and other univariate and multivariate analyses were carried out, and the relevant odds ratios were calculated.

Results: There were 85 babies total; 62 of them were born preterm, and 2 of them died. The non-survivors had lower GA, BW, and SNS scores ($p < 0.05$) than the survivors; in the subgroup analysis, only the SNS values remained lower. Preterm babies and the group as a whole had higher fatality rates when it came to time to admission ($p < 0.05$). A cut-off value of MSNS-GAT score < 10 in multiple Cox regression models was more accurate in predicting mortality than SNS (AUC 0.735 vs. 0.775) in both the overall group and the preterm babies group (AUC 0.885 vs. 0.810).

Conclusions: When compared to the SNS score, the novel MSNS-GAT score dramatically improved mortality prediction at admission for both preterm newborns and the whole research group, indicating that GAT may be more important than GA and BW in determining the prognosis of outborn preterm infants.

Keywords: mortality; neonatal transportation; newborn; outborn; scoring system; sick neonatal score.

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Title: Reducing Transfer Times from the Emergency Room to the Neonatal Intensive Care Unit: A Quality Improvement Initiative

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Abstract

Background: Delayed transfer of outborn neonates from the Emergency Room (ER) to the Neonatal Intensive Care Unit (NICU) can lead to prolonged hospital stays and increased mortality. Factors contributing to delays include transport incubator availability, bed booking, and staffing shortages. This study aimed to improve transfer efficiency.

Objectives: The goal was to reduce transfer time to the NICU from the ER to <=1 hour in 80% of cases within 6 weeks.

Methods: A multidisciplinary team from the ER and NICU collaborated, identifying obstacles through clinical microsystems analysis. Interventions focused on transport incubator availability, bed booking efficiency, procedure prioritization, and staff training. Plan-Do-Study-Act cycles were used for iterative improvements. Data were collected from October to November 2023. sustainence phase data collected till July 2024 .

Results: Transfer time decreased from 4.5 to 1 hour, exceeding the goal with a 75% reduction. Process changes included timely transport incubator availability, efficient bed booking, prioritization of procedures, and staff training.

Limitation : Due to merging of adult emergency nursing staff during reshuffling , during the sustenance phase there is decrease in the percentage of achievement of early transport .

Strength :This study highlights the effectiveness of a structured quality improvement approach in addressing multifaceted challenges and enhancing patient care by expediting transfers from the ER to the NICU.

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Perinatal Outcomes of Assisted versus Spontaneous Twin pregnancies: A Single Centre Experience

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Abstract:

Introduction: The global twinning rate has increased by a third, due to the dramatic increase in use of ovulation-induction, in-vitro fertilization and delayed marriages. Twin pregnancies are considered high risk making it essential to establish if twin pregnancies conceived following Assisted Reproductive Techniques (ART) have additional risks compared to those conceived naturally.

Aims and objectives: To study perinatal outcomes of twin pregnancies and compare the outcomes of twins conceived spontaneously versus after ART.

Materials and methods: This prospective observational study enrolled 110 twin pairs admitted to a tertiary urban public sector NICU from January 2023- June 2024. Demographic and clinical details of 110 mothers & their twins were recorded and analyzed.

Results: Mean maternal age (in years) in ART group was significantly higher than the spontaneously conceived group (30.67 versus 27.29, p =0.008). More mothers in ART group were primigravida (12/18 versus 36/92, p = 0.03). Chronic hypertension (p=0.004) and PPROM (p=0.004) were higher in ART group. Mean birth weight (in gms) was lower in ART group (1502 versus 1677, p=0.034). Exclusive breastfeeding rates were significantly higher in spontaneous group (p=0.025). Growth restriction and neonatal mortality was higher in the ART group, though not statistically significant. Mean duration of hospital stay was similar in both groups.

Conclusions: Twins born after ART tend to be significantly smaller and tend to have a higher, though statistically insignificant, risk of death. However, they have similar morbidities during NICU stay compared to those conceived spontaneously.

P 123

Title: Validation of a novel point-of-care device (Bilistick 2.0) for measurement of serum bilirubin in neonates – a diagnostic accuracy study

Arunkumar M, Mangalabharathi S.

Abstract:

Background: Newborn jaundice occurs in up to 85% of all live births. Epidemiological evidence says severe neonatal jaundice results in substantial morbidity and mortality due to kernicterus. The burden is unacceptably high in Low-middle income countries. Important factors that contribute to the incidence of kernicterus in developing nations are inadequate screening for neonatal jaundice and inadequate measurement of serum bilirubin levels. Bilistick 2.0 is a point of care device for measurement of serum bilirubin.

Design, setting and patients: It is a cross-sectional, diagnostic accuracy study involving 80 paired measurements of all gestational age infants who had neonatal jaundice. Venous sample was taken and serum bilirubin measured by Diazo method compared with that of Bilistick 2.0.

Outcome measures: Accuracy of serum bilirubin as compared between both methods. Secondary outcomes such as turn around time.

Results: 80 paired measurements were taken. The correlation coefficient r=0.879 (Strong positive correlation). Bland-Altman plot showed mean difference of 0.089. The upper and lower limits of agreement was -3.88 to +3.70 mg/dL. Turn around time for Bilistick was 2 min and that of Diazo method was 2 hours.

Conclusion: Bilistick 2.0 is a novel point-of-care device that measures serum bilirubin with strong positive correlation and can be used in field settings for early referral and timely initiation of treatment where facilities for measurement of serum bilirubin is not readily available.

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Title: Clinical profile amongst small for gestational age (SGA) neonates presenting with hypoglycemia

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Place: GMCH, Chhatrapati Sambhajinagar

Abstract:

Background: Neonatal hypoglycemia is a prevalent metabolic disorder that poses significant risks to newborns, particularly those classified as Small for Gestational Age (SGA). Understanding the clinical manifestations of hypoglycemia in SGA neonates with other risk factors is crucial for prompt identification and management to prevent long-term complications.

Aim: This study aimed to compare the clinical manifestations of risk factors of hypoglycemia among all hypoglycemic SGA neonates admitted to our Neonatal Intensive Care Unit (NICU).

Material and Methods: A prospective observational study was conducted over six months, involving 70 SGA neonates diagnosed with hypoglycemia. Clinical data, including blood sugar level, clinical presentation, demographic information, maternal history, and neonatal characteristics, treatment were documented and analysed.

Results: Manifestations of various risk factors(10) among the 70 SGA neonates studied, average days of hypoglycaemia, average glucose infusion rate (GIR), average sugar level and average day of onset for metabolic(2) was 6,10,13,2.5; preterm(22) 2.2,8.3,35.9,3.1; anomalous(2) 3,8,39,4; sepsis(14) 2.7,9,17.1,2.7; polycythemia(2) 2,8,41,4; maternal beta blocker(12) 3.3,10,34,2.5; perinatal asphyxia(4) 2,8,20,3; IDM(4) 1,6,35,1.5; Only SGA(8) 2,8,23.5,3. The analysis indicated significant variability among various risk factors.

Conclusion: The study demonstrated that hypoglycemic SGA neonates with metabolic risk had highest duration of hypoglycaemia, lowest sugar level, highest GIR requirement along with maternal beta blocker. Infant of diabetic mother having the least days of hypoglycaemia, least GIR requirement, earliest onset of hypoglycaemia. This study in future if done in a significant number of neonates could provide us better insights about monitoring of neonates with risk of hypoglycaemia in a tertiary government hospital.

P 125

"BRIDIGING THE GAP FOR FRAGILE FUTURES"

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ABSTRACT

Introduction : In India, preterm birth incidence is approximately 10.9% in 2019, totaling 15.2million infants globally[2]. Preterm infants require comprehensive follow-up care to mitigate risks of neurodevelopmental delays, visual impairment due to Retinopathy of prematurity (ROP), and other complications.

Objectives : To assess the awareness of preterm mother's regarding preterm care and follow-up.

Methods : A descriptive cross sectional study design conducted among 32 preterm mother's to gather information on the awareness on preterm care and follow-up. Questionnaire given to mothers and data was analyzed by using SPSS version 22 and various tests frequency and percentages and the findings were presented in tables.

Results : This study depicts that % preterm mother had adequate awareness regarding preterm follow-up, 100% mothers were aware about benefits of KMC, and % mothers were giving mother's own milk.

Conclusion : In this study, demonstrated optimal awareness of mother's regarding preterm follow-up care, thereby facilitating improved health outcomes for their preterm neonates.

Keywords – Preterm, counselling, follow-up, ROP, KMC.

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TITLE: "Analysing the Future"

" From fragile start to flourishing future"

" From fragility to resilience"

Outcomes in Extremely Low-Birth-Weight Babies:

A Retrospective Cohort Study

Authors

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Background and objective:

Limited data has been published on the short-term outcomes of extremely low birth weight (ELBW) infants from India. In the present study, our objective was to describe and analyze the mortality and co-morbidities of ELBW infants admitted to our two neonatal intensive care units and to compare the results with data published by the National Institute of Child Health and Development(NICHD).

Design and setting:

This study was a retrospective analysis of prospectively collected data from a tertiary care center over a span of 3 and half years period.

Patients and methods:

Data were obtained from our neonatal intensive care unit database.

Results:

A total of 75 ELBW infants with birth weights of 1000 g or less were born during this 3 and half year period. Of these 56/75 (75%) survived to discharge. The rates of bronchopulmonary dysplasia 18(24 %), patent ductus arteriosus requiring medical and surgical management are 32/75 (42 %) & 2/75 (6%) respectively, intraventricular hemorrhage of all grade 15/75 (20%), periventricular leukomalacia 3/75(4%), necrotizing enterocolitis 9/75 (12%), necrotizing enterocolitis requiring surgical intervention 2/75(2.6%) and retinopathy of prematurity requiring treatment 12/75 (16%).

Conclusion:

In this population of extremely low birth weight infants, survival rates and complications related to prematurity were comparable to NICHD data.This data will help in parental counselling and followup.

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NEURODEVELOPMENTAL OUTCOMES OF VERY LOW BIRTH WEIGHT INFANTS AT 9 MONTHS OF CORRECTED GESTATIONAL AGE

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INTRODUCTION- Very Low Birth Weight (VLBW) infants are thought to have substantial risk of neurodevelopmental and behavioural abnormalities. We planned to evaluate the neurodevelopmental outcome of VLBW infants at corrected gestational age (CGA) of 9 months and the risk factors adversely affecting it.

AIM & OBJECTIVES- Aim was to evaluate neurological and developmental outcome of VLBW infants. The objectives were to estimate the incidence of abnormal neurodevelopmental outcome, and to ascertain the risk factors affecting adverse neurodevelopmental outcomes.

MATERIAL AND METHODS- It was a prospective observational study. It was conducted in NICU of a tertiary care institute in northern India, extending over a period of 18 months, on 90 VLBW infants on follow-up in OPD at 9 months corrected gestational age as assessed by Hammersmith Infant Neurological Examination (HINE) score.

RESULTS- 100% of patents had HINE scores of ≥60. The mean HINE score was 74.46 with a standard deviation of ±3.12, the median was 74, and the overall scores ranged from 64 to 78. There was no significant difference in HINE scores between neonates with or without the factors like IUGR status, AEDF and administration of surfactant.

CONCLUSION- Despite being at high risk for abnormal developmental and neurological outcomes, most of the VLBW infants achieved good neurodevelopmental outcomes as assessed by the HINE.

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Assessing Skin Damage Risk and Severity Caused by SpO2 Probe Attachment in Preterm Neonates – Prospective Single Center Study

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Presenting Author – Dr Somashekhar M Nimbalkar

Location of Study - Department of Neonatology, Pramukhswami Medical College, Bhaikaka University, Karamsad Gujarat

Introduction: Pulse oximetry (SpO2) is vital for monitoring arterial oxygen saturation in neonates, particularly those with respiratory issues or congenital heart defects. However, the use of SpO2 probes can lead to Medical Adhesive-Related Skin Injury (MARSI), which poses significant risks due to the fragility of neonatal skin.

Aims & Objectives: This study aims to evaluate the incidence of skin damage associated with SpO2 probe usage in preterm neonates and to assess its correlation with gestational age and birth weight.

Material & Methods: Conducted as a single-center prospective observational study at Pramukhswami Medical College's NICU over six months (May to October 2024), we observed preterm infants twice daily. The Neonatal Skin Condition Score (NSCS) was utilized to assess skin integrity at probe sites. Statistical analysis included calculating the frequency of NSCS scores exceeding 3, indicating skin damage, and correlating these scores with gestational age and birth weight.

Results: Out of 94 newborns, 70.21% experienced skin damage (NSCS > 3) during their hospital stay. A significant correlation was found between worse skin conditions and lower gestational age ($r = -0.5362$) and birth weight ($r = -0.6158$), both with $p < 0.001$. The average gestational age was 32.92 weeks, and the average birth weight was 1.74 kg.

This study highlights the high incidence of MARSI in neonates due to SpO2 monitoring, emphasizing the need for improved practices to protect this vulnerable population from skin injuries.

P 129

Weight-based dose adjustment of caffeine citrate versus fixed dose caffeine citrate for the treatment of neonates with apnea of prematurity: A randomised control trial

Authors: Dr Akshay Jain, Dr Sourabh Dutta, Dr Praveen Kumar, Dr Jogender Kumar

Introduction: Caffeine citrate is commonly used to treat apnea of prematurity. Weight based dose adjustment of caffeine is not performed consistently by clinicians. This may contribute to apnea recurrence requiring dose escalation and prolongation of treatment and hospital stay.

Aims and objective: To compare the incidence of apnea among neonates receiving caffeine dose adjusted for weight gain with those receiving same absolute dose of caffeine without any weight adjustment.

Material &Methods: This was an open-label randomized control trial which was conducted in a level III NICU. 108 preterm neonates (<32 weeks) who received caffeine were enrolled. 54 subjects were enrolled in each group. In intervention group, dose adjustment was made for change in weight whereas in control group, fixed dose of caffeine citrate was continued. The dose was increased for clinical indication in both groups.
The primary outcome was the number of significant apneas/100 person-days.
The secondary outcomes were- number of apneas requiring stimulation, BMV, intubation, increase in dose of caffeine, maximum dose required, recurrence after stopping caffeine, incidence of BPD, NEC, ROP, PVL, IVH and adverse effects.

Results: The total number of apneas/100 person-days was 30.5 in the intervention group and 31.1 in the control group with incidence risk ratio of 0.983 (95 % CI 0.859 - 1.12, p value- 0.80). There was no significant difference observed in any of the secondary outcomes.

Conclusion: Weight based dose adjustment of caffeine citrate did not reduce the incidence of all cause apnea compared to fixed dose of caffeine.

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TITLE PAGE AND ABSTRACT

Title- Accuracy of Shukla's Formula in Determining Optimal Umbilical Catheter Placement in Neonates Admitted in Neonatal Intensive Care Unit (NICU)

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Introduction:

Shukla's formula is commonly used to estimate catheter insertion depth. Verifying its accuracy can help reduce complications such as repeated adjustments and central line-associated bloodstream infections (CLABSI).

Objective:

To assess the accuracy of Shukla's formula in determining the correct insertion depth of umbilical arterial (UAC) and venous catheters (UVC) in neonates, using chest X-rays as the gold standard.

Methodology:

Retrospective data from January 2024 to June 2024 was collected and analysed on neonates requiring umbilical central line placement in tertiary care NICU. Baseline characteristics, insertion depth and other catheter related details were obtained from hospital information management system, Neonates were included if catheter fixation variation range by ±0.5 cm from Shukla's predicted depth. UVC tips were classified as ideal (T9-T10), high, or low, and UAC tips as ideal (T6-T9), very high, or low. Considering the reported accuracy rate of Shukla's formula 72% with relative precision of 20% with 95% confidence interval, the number required was 38

Results:

Among 54 neonates with umbilical catheters, 40 were evaluated for UVC placement, with 25 (62.5%) showing ideal placement. Success was higher in neonates >32 weeks (70%) with fewer manipulations (15%) than in those <32 weeks (55%) with 40% manipulations [For success rate p=0.119, manipulation, p=0.053]. Of 15 neonates with UAC, 11 (73%) had ideal placement, with fewer manipulations (26%), and a significantly higher success rate than UVC placement (p=0.035).

Conclusion:

Shukla's formula provides reasonable accuracy for umbilical catheter placement. Further research comparing ultrasound guidance versus Shukla's formula is recommended to improve outcomes.

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OUTCOME OF PATENT DUCTUS ARTERIOSUS (PDA) IN PRETERM NEONATES BORN LESS THAN 35 WEEKS OF GESTATION

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INTRODUCTION- Patent Ductus Arteriosus (PDA) is a communication between the Aorta and Pulmonary artery in fetal life to allow right ventricular blood flow to reach the Aorta since Lungs are non-functioning. The presence of PDA in preterm neonates can be associated with many complications. We planned to study the outcome of PDA in neonates born < 35 weeks of gestation.

AIM & OBJECTIVES- To study the outcome of PDA in neonates born at <35 weeks period of gestation and to ascertain the day of life when PDA in a preterm baby closes as seen by Echocardiography.

MATERIAL AND METHODS- It was a descriptive observational study. It was conducted in NICU of a tertiary care institute in northern India, extending over a period of 18 months on 90 preterm neonates born <35 weeks of gestation, and was monitored by serial Echocardiography.

RESULTS- PDA was found in 27 neonates (30%) at 24 hours of life. When monitored by serial Echocardiography at 48 hours, 72 hours, 96 hours, 120 hours and 144 hours of life, PDA was present in 16 (17.8%), 11 (12.2%), 2 (2.2%), 2 (2.2%), 1 (1.1%) neonate respectively. Total of 14 neonates (15.5%) were symptomatic and needed medical management and 13 neonates (14.4%) were asymptomatic who did not require any management.

CONCLUSION- About one third of the neonates had PDA beyond 24 hours of life and half of them required medical management as PDA was clinically significant.

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Surveying Pediatricians' and Neonatologists' Awareness of Neonatal Skin Health and Skin Damage Prevention in Neonatal Care – A Cross-Sectional Survey of NNF Gujarat members

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Presenting Author – Dr Somashekhar M Nimbalkar

Location of Study - Department of Neonatology, Pramukhswami Medical College, Bhaikaka University, Karamsad Gujarat

Introduction

The neonatal period represents a critical window for infant development, with the skin playing a crucial role in protecting against infections and maintaining hydration and temperature regulation. Paediatricians and Neonatologists play a pivotal role in safeguarding neonatal health, and equipping them with comprehensive knowledge of neonatal skin physiology, best practices for skin assessment, and effective preventive measures is crucial for optimizing neonatal outcomes.

Aims & Objectives

This study aims to assess Paediatricians and Neonatologists understanding of the physiological characteristics of neonatal skin and its vulnerabilities.

Material & Methods

A cross-sectional survey was conducted over a five-month period, from April to August 2024, targeting members of NNF Gujarat. A semi-structured questionnaire was developed to gather insights on several key areas, including training quality, online resources, clinical exposure, facilities and equipment, practice implementation, confidence levels, the need for additional

training, and impact on neonatal mortality. The survey was distributed via Google Forms, with communications through phone calls and individual WhatsApp messages.

Results

The survey collected responses from 325 pediatricians and neonatologists in Gujarat, India. A significant majority recognized the unique vulnerabilities of preterm neonates' skin and its physiology, suggesting a foundational understanding of neonatal dermatology among practitioners. However, critical gaps in knowledge were identified, particularly regarding the signs of skin damage, which could have serious implications for neonatal care.

Conclusions

The findings of this study highlight the need for ongoing education and training in neonatal skin health assessment to optimize skin health for neonates and promote their overall well-being.

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Risk factors and clinical outcomes of sepsis associated Necrotizing enterocolitis- A cohort study

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Subspeciality category: Gastroenterology/Infectious disease

Introduction

Necrotizing enterocolitis (NEC) is a major neonatal gastrointestinal emergency with a high mortality rate. In developing countries, there is a significant contribution of sepsis towards NEC development.

Aims and objectives

The primary objective is to identify differences in risk factors and outcomes between NEC cases with sepsis(defined by a positive blood culture at NEC onset) and those without sepsis. The secondary objectives are to study the proportion of early(≤ 7 days) and late NEC, clinical presentation, and radiological findings.

Material and methods

Ours was a retrospective observational cohort study done in a tertiary neonatal care unit after the Institute Ethics committee approval. All neonates who developed NEC stage 2/3 in the past 3 years were included. The clinico-demographic characteristics were entered in a structured proforma. Diagnosis and staging of NEC were done as per modified Bell's staging. Data analysis was done using software SPSS 24.0.

Results

A total of 47 neonates during study period developed NEC. Out of 47, 38(81%) had early NEC. Median gestational age was 31 (28-33) weeks and median birth weight was 1250(1030-1540) grams. The median age at NEC onset was 4(3-5) days. Twenty-three neonates (49%) had culture-positive sepsis before NEC onset. Of this, 18(78%) had *Klebsiella pneumoniae* sepsis, two, *Pseudomonas aeruginosa*, 2 *Acinetobacter baumannii*, and one, *Elizabethkingia anophelis*. Mortality was significantly higher in those with culture-positive sepsis preceding NEC onset(61%), compared with NEC without sepsis(39%)[OR(95%CI) 2.45(1.00-5.99),P value 0.04]. Risk factors like growth restriction, feeding strategies, and morbidities like shock, acute kidney injury, short bowel syndrome, etc., were not significantly different between groups.

Conclusions

Higher mortality was observed in neonates having sepsis preceding NEC. Thus, emphasis on infection prevention strategies is important in NEC prevention as well.

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Neonatal Septic Arthritis: Clinical Profiles, Microbiological Patterns, and Key Outcome Predictors

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Introduction:

Neonatal septic arthritis, though rare (0.6 per 1,000 live births in India), leads to significant morbidity. This study highlights the importance of early diagnosis and treatment to improve outcomes and minimize complications.

Aims & Objectives:

To assess the clinical profile and factors associated with unfavorable outcomes in neonates with septic arthritis.

Methodology:

This nested case-control study was conducted in the Neonatology Department, ICH, Chennai, from January 2021 to August 2024. Neonates with septic arthritis were included, excluding those with major skeletal anomalies. Data on antenatal risk factors, gestational age, delivery mode, NICU stay, antibiotic use, joint involvement, cultures, organisms, and outcomes were analyzed. Comparisons between favorable and unfavorable outcomes were made using chi-square tests for categorical variables and t-tests or Mann-Whitney U tests for continuous variables.

Results:

Among 64 neonates (51.6% males, 48.4% females), 34.4% were preterm and 65.6% were term. Ten neonates had birth weights <1500g, and 16 weighed between 1500–2500g. NVD occurred in 60.9%, and LSCS in 39.1%. Risk factors included PPROM (17.2%), perinatal asphyxia (6.3%),

NICU stay >3 days (29.7%), prior sepsis treatment (18.8%), and invasive procedures (15.6%). A total of 78 joints were affected, mainly knees (43.8%) and hips (42.2%). Blood cultures were positive in 32.8% and joint aspirates in 21.9%, mostly revealing Staphylococcus aureus. Surgical interventions (62.5%) included arthroplasty and aspiration. There were 3 deaths (4.7%) and complications such as osteomyelitis (12 cases). Treatment >14 days was linked to unfavorable outcomes (OR: 0.105, p=0.034), while early treatment showed a non-significant trend toward favorable outcomes (OR: 3.89, p=0.165).

Conclusion:

Early diagnosis and timely treatment are critical to improving outcomes in neonatal septic arthritis.

Keywords: Neonatal septic arthritis, morbidity, treatment timing, risk factors, outcomes, Staphylococcus aureus, unfavorable prognosis.

P 135

STROKE IN NEONATES A VARIABLE PRESENTATIONS – A CASE SERIES.

Introduction :

Neonatal stroke is an important complication to consider when assessing a newborn as it has the potential for chronic sequelae related to neurodevelopment. Injury to cerebral tissue occurs by a disruption in arterial blood flow either from a thrombus or embolism, also known as PAIS, or from an interruption by a thrombus in a major cerebral vein, otherwise known as CSVT. Here, we present four consecutive cases of neonatal stroke over a period of two years, associated with different risk factors and different clinical presentations. Two of these babies were born to mothers with no prenatal care.

CASE 1 :

A single term female baby with birth weight of 3.2kg delivered to a primigravida mother with no maternal comorbidities during pregnancy with all antenatal scans being normal delivered via LSCS in view of meconium stained amniotic fluid. Baby had respiratory distress hence was admitted in NICU for respiratory support. At 14 hours of life baby had right side focal seizures involving upper limb and lower limb with moderate encephalopathy. Initial metabolic workup and septic workup was negative. Neurosonogram showed left sided parenchymal bleed. MRI done showed left sided arterial ischemic stroke. Maternal APLA workup done which was negative. Baby was on 2 antiepiletic medication. Baby was given the supportive care and whole exome was sent reports being awaited. Over the course of stay encephalopathy improved and baby was discharged and baby is on regular followup for neurodevelopmental assessment.

CASE 2 :

A single term female baby 2.8kg delivered to a primigravida mother with no maternal comorbidities during preganancy was delivered via normal vaginal delivery and was initiated on direct breast feeding on day 2 of life baby had hypoglycemia hence was admitted to NICU on day 6 of life baby had feed intolerance , septic screen being positive with severe thrombocytopenia baby was on IV antibiotics. On day 6 neurosonogram showed grade 4 IVH with parenchymal bleed. MRI done showed right sided intra cranial hemorraghe suggestive of hemorrhagic stroke with cerebral edema. Baby had persistent vomiting. Neurosurgery opinion taken and extraventricular drain was placed. Thrombocytopenia improved and sepsis resolved. Baby was symptomatically better and baby was discharged and is on regular followup

CASE 3 :

A single term male baby with birth weight of 3kg delivered to a gravida 2 mother with no maternal comorbidities. At antenatal detected intracranial parenchymal bleed delivered via electively LSCS baby cried immediately after birth. Baby was evaluated further. Baby did not have any neurological symptoms. Initial coagulation workup and metabolic workup done which was normal. MRI showed arterial ischemic stroke. baby is neurologically normal with no seizures and no features of encephalopathy. Whole exome sequence is sent reports are awaited

CASE 4

A single term female baby with birth weight of 3.4kg born to a gradiva 2 mother with no maternal comorbidities baby was delivered via normal vaginal delivery baby cried immediately after birth and was shifted to mother side. Day 2 of life baby had generalized seizures with status epileptics required mechanical ventilation with bulging anterior fontanalle. Neurosonogram showed grade with IVH with paramchymal bleed. CT showed Intracranial hemorrahage with midline shift hence neurosurgical intervention was done with craniotomy with evacuation of the clot. Further on baby is on respiratory support secondary to neurogenic stridor.

DISCUSSION :

Perinatal stroke is defined as a cerebrovascular accident occurring between 20 weeks' gestation and up to 28 days after birth in the newborn period, causing neurological damage in the territory of the affected vessel and persisting for greater than 24 hours . The classification includes perinatal arterial ischemic strokes (PAIS), cerebral sinus venous thrombosis (CSVT), or hemorrhagic strokes.

In our case series all the cases had varied presentation and had varied prognosis. Each cause of stroke in neonates are caused by numerous causes which requires detailed evaluation and requires close neurodevelopmental follow-ups.

CONCLUSION

This was a descriptive study on the etiology, clinical presentation, management, and necessary work-up of neonatal stroke in a regional neonatal population with limited prenatal care. Our case series illustrated four different presentations of strokes in the perinatal period. While the management of most perinatal strokes is supportive, early recognition allows for the focus to be placed on treatment of underlying conditions and preventing further injury.

P 136

EFFECT OF THERAPEUTIC HYPOTHERMIA ON NEONATAL HYPOXIC ISCHEMIC ENCEPHALOPATHY AMONG THE NEONATES

Introduction & Need for The Study

Hypoxic- ischemic encephalopathy is the leading cause of neonatal brain injury, morbidity and mortality globally.

In developed countries , incidence is estimated at 1-8 per 1000 live births and in the developing world estimates are as high as 26 per 1000 live births.

India carries the largest burden of neonatal deaths worldwide, perinatal asphyxia and HIE accounts for a quarter of these deaths and an unknown number of survivors with lifelong disability.

Evidences from the experimental and clinical studies suggests that therapeutic hypothermia offers neuroprotection and hence reduces cerebral injury and also improves neurological outcomes.

The purpose of the study is to show that the initiation of therapeutic hypothermia within 6 hours after birth in infants of neonatal encephalopathy admitted to NICU of rajarajeswari medical college &hospital , Bengaluru, reduces mortality and also reduces incidence of other life threatening complications like AKI in asphyxiated neonates

Materials and Methods:

This was a tertiary care teaching hospital based, prospective observational study conducted on full term asphyxiated neonates with HIE stage 2 or 3 receiving Therapeutic hypothermia admitted in the Neonatal Intensive Care Unit.

Observations and results:

In our study it was noted that all the neonates who received Therapeutic hypothermia had thrombocytopenia which is the known complication associated with TH. Also it was noted that the incidence of AKI was reduced in the asphyxiated neonates who received TH as treatment modality

Conclusion:

Therapeutic hypothermia is the newer and safer modality for neuroprotection in treatment of neonatal asphyxia however no major life threatening complications were noted due to TH in any of our asphyxiated neonates who received TH, however to understand the long term neurodevelopmental outcome the follow-up of these neonates are needed.

Key words: Asphyxia; therapeutic hypothermia ; Acute kidney injury

P 137

Title of the study: Hypernatremia management before and after implementation of a unit protocol

Dr Amal Jacob Sebastian, Dr Chinthana L, Dr Lakshmi Parvathi, Dr. Saudamini Nesargi, Shashidhar A, Dr Nivedita Kamath, Dr. Suman Rao- St Johns Medical College Hospital, Bangalore

Introduction: Hypernatremia in new-borns is often due to inadequate breastfeeding and increased insensible water loss. Controlled sodium reduction (10–12 mEq/L per day) is vital to prevent neurological complications.

Aims & Objective:

To compare the rate of fall of sodium in neonates with hypernatremia (S. Na > 160mEq/l) during the first 72 hours of hospital stay, before and after the implementation of a unit protocol.

Material & Methods:

This study was done in a tertiary care NICU, from 2015 and 2021. In 2019, a new protocol aimed at better management of hypernatremia was introduced. Thus, dividing the study population: the pre-protocol group (G1) and the post-protocol group (G2). Data was collected from case files. Statistical analysis done using t-test and chi-square test.

Results:

A total of 44 neonates were studied, with 24 in G1 and 20 in G2. Baseline characteristics were comparable between groups: mean birth weight (g) [2845 ± 456 vs 2935 ± 36]), mean gestation (wks.) [38 ± 1.6 vs 37 ± 1.5], serum sodium at presentation (mEq/L) [176 ± 12.4 vs 172 ± 13.5], median age at presentation (days) [6, 4–8 ; vs 7, 5–9] and exclusive breastfeeding rates (85% and 79%).

Post protocol implementation, rate of reduction of sodium on day 1 was more appropriate (G1=14.2 ± 2.6, G2=10.2 ± 3.4 mEq/L/day, p = 0.04), with no significant differences on days 2 and 3.

Conclusions:

Implementation of the protocol allowed a more gradual fall in sodium.

P 138

"TROUBLED BREATH, HIDDEN MASS"- UNMASKING CARDIAC RHABDOMYOMA, A CLUE TO TUBEROUS SCLEROSIS

AUTHOR: Dr. N. GOKILA - II year Postgraduate

CO-AUTHOR: Prof. Dr. Luke Ravi Chelliah MD.,

PLACE OF STUDY: Institute of child health, Egmore, Chennai.

BACKGROUND:

Tuberous sclerosis complex is an autosomal dominant multisystem disorder, caused by mutation in TSC1 and TSC2 genes. Its prevalence is 1 in 6000 to 10000 newborns. Rhabdomyomas are most common cardiac tumour often associated with Tuberous sclerosis complex.

CASE PRESENTATION:

A Male baby, third born to P3L3A1 hypothyroid mother, born via LSCS with normal perinatal transition had respiratory distress referred after intubation for impending respiratory failure. Later the baby developed seizures & supraventricular tachycardia. ECHO showed multiple rhabdomyoma attached to the ventricular wall. CSF analysis shows meningitis. Baby was treated with IV antibiotics, amiodarone infusion followed by oral propranolol. 3 weeks post admission, baby developed recurrent seizures, USG cranium & CT brain suggestive of hydrocephalus. Extra ventricular drainage followed by Left VP shunt was done. Genetic analysis showed TSC1 gene positive. Following a collaborative approach, the baby revived and remains under close follow-up.

OUTCOME:

Baby discharged with adequate weight gain,oral feeds, oral propranolol, amiodarone & oral antiepileptics. 45th and 75th day vaccination given. Parenteral counselling & advice on screening of other family members given.

DISCUSSION:

Tuberous sclerosis complex is an extremely heterogeneous disease with wide clinical spectrum. Rhabdomyomas are tumours with favourable prognosis because they often regress spontaneously, but sometimes it may cause obstruction & arrhythmias. TSC with neurological involvement. Proper diagnosis & timely management prevent catastrophic cardiovascular collapse.

P 139

Abstract

Double volume exchange transfusion in neonates with severe jaundice in the era of LED phototherapy-a case series.

Authors' names: Monalisa Pradhan, Anjali Sharma, Nalini. A, P. Sriram

Institution: Department of Neonatology, All India Institute of Medical Sciences, Bilaspur, Himachal Pradesh.

Introduction: Neonatal jaundice, though a common clinical condition, severe hyperbilirubinemia necessitating exchange transfusion remains a concern due to acute bilirubin encephalopathy and long-term neurodevelopmental sequelae. Exchange transfusion and acute bilirubin encephalopathy has reduced drastically nowadays post Light emitting diode intensive phototherapy. This study analysed clinico-etiological profile of neonates treated with double volume exchange transfusion in a tertiary care hospital.

Methods: This hospital based descriptive cross-sectional study was carried out on neonates who underwent exchange transfusion over five months period from May to September 2024. Data obtained by structured proforma was analysed with descriptive statistics.

Results: Among 8 neonates who underwent double volume exchange transfusion, 5 were boys and 6 were outborn. Their mean gestational age was 37.1 weeks (range 32-40 weeks) and birth weight ranged 1350 to 3720 gm. Common aetiologies identified include ABO incompatibility (6 cases), Rh incompatibility (1 case) and G6PD deficiency (2 case). Their peak serum bilirubin levels ranged from 19 to 45 mg/dL. Three neonates required multiple exchange transfusion and one neonate had maximum of 3 Exchange transfusion. Post-exchange, 5 neonates had thrombocytopenia which was managed conservatively. Maximum modified bilirubin induced neurological dysfunction score was 10/12 in one neonate with G6PD deficiency.

Conclusion: This case-series reemphasises reducing preventable causes of permanent neurological damage by screening for severe neonatal jaundice. Recommendations include community level implementation of mandatory routine screening, early identification and timely referral for severe neonatal jaundice utilizing home-based newborn care visit by ASHA worker using transcutaneous bilirubinometer with single cut off value >/=13mg/dL or gestational age specific color-coded graphs.

P 140

RECURRENT UNCONJUGATED HYPERBILIRUBINEMIA IN AN INFANT - A UNIQUE CASE OF GILBERT SYNDROME

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INTRODUCTION

Gilbert syndrome, a relatively common but less conspicuous condition, is characterized by intermittent episodes of unconjugated hyperbilirubinemia. These episodes are caused due to limited activity of the enzyme UGT1A1. Though the benign nature of the syndrome is well-documented in adults, its impact on neonates and particularly those with recurrent hyperbilirubinemia, remains underappreciated, especially considering its similarities with physiological jaundice.

HISTORY AND PRESENTATION

A term baby presented with severe hyperbilirubinemia on Day 4 of life with serum bilirubin levels reaching upto 21.3 mg/dL. Phototherapy was administered and the baby was discharged after bilirubin levels reached normal range. However, the baby was readmitted on Day 21 , Day 23 and Day 31 with bilirubin levels elevating upto 26.5 mg/dL, 18 mg/dL and 18.3 mg/dL respectively. On the basis of laboratory tests, Hemolytic hyperbilirubinemia was excluded and TSH levels were also within normal range. Further, no evidence of encephalopathy/dysmorphic features were noted. There were no concerns regarding his feeding or growth, nor any significant family history of medical issues and his parents were non-consanguineous. Breast milk jaundice was also excluded as diagnosis.

TREATMENT AND INVESTIGATION

The infant's bilirubin levels responded to intensive phototherapy but showed four separate episodes of jaundice which highlighted the atypical severity of the condition in this case. With no other underlying causes identified, genetic testing was performed, revealing a UGT1A1 gene mutation (1/6 genotype which confirmed Gilbert syndrome. The absence of hemolysis and other potential causes further substantiated this finding. BERA and MRI Brain results were normal. The infant is currently under follow up and gaining developmental milestones as per age.

SUMMARY AND CONCLUSION:

While Gilbert syndrome is not generally considered to cause prolonged jaundice, a unique case is presented here which underscores the importance of genetic testing in further diagnosis and management. Genetic studies can further help in identifying the dreaded Criggler Najjar Syndrome and thereby avoiding prenatal diagnosis for next pregnancy.

P 141

Survival and predictors of mortality among neonates with persistent pulmonary hypertension (PPHN)- A Cross-sectional Observational study

Londhe AC, Joshi AK, Deshmukh LS

Introduction-

Despite advances in neonatal care, mortality in PPHN still remains high as 40%. In addition to supportive treatment, severe PPHN cases needs additional treatment which may not be available in Low-middle income countries (LMIC). This includes Surfactant, High frequency ventilation, inhaled Nitric oxide (iNO) and various pulmonary vasodilators like sildenafil, milrinone and sometimes Extracorporeal membrane oxygenation (ECMO).

Evaluation of risk factors and predictors of poor outcome will help neonatologists or paediatrician in managing PPHN cases. Hence, goals of the study were to evaluate risk factors, predictors of mortality and survival among term neonates with PPHN in Level III NICU in public sector.

Aim and Objectives-

1. To evaluate clinical and echocardiographic parameters as predictors of mortality
2. To evaluate antenatal and postnatal risk factors for PPHN
3. Survival analysis

Methodology-

This observational cross-sectional study includes 126 confirmed PPHN with a gestational age of ≥37 weeks without congenital heart disease. Univariate and multivariable binary logistic regression were used to identify risk factors for poor outcomes.

Results-

The mortality rate was 46%. Preterms were 16.66%. Sildenafil was required in 103 (81.7%) cases and Milrinone in 44 (34.9%) cases. In 36 cases, both sildenafil and milrinone were required. The leading cause was perinatal asphyxia followed by meconium aspiration syndrome. Independent risk factors for mortality were Severe PPHN at diagnosis, APGAR score of less than 5 at 5 min, presence of myocardial dysfunction, persistent Bidirectional or right to left shunt in DA on functional echocardiography.

Conclusion-

Presence of myocardial dysfunction, reversal of shunt in DA, Poor APGAR at 5 min and severe PPHN at diagnosis were independent factors for predicting poor outcome in PPHN in neonates. Knowledge of associated risk factors for mortality is essential to guide the management of PPHN.

P 142

TITLE: DECODING NEONATAL HYPERTENSION

AUTHORS: Dr.S.Abisha 2nd year Pediatric PG

Dr.Mekalai Suresh Kumar Professor of Pediatrics

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PLACE OF STUDY: Institute of child health and hospital for children,Egmore and Kasturba Gandhi Hospital.

INTRODUCTION: Advances in the ability to identify, evaluate, and care for infants with hypertension, coupled with advances in the practice of neonatology in general, have led to an increased awareness of hypertension in modern neonatal intensive care units.This paper provides an overview of the differential diagnosis of hypertension in the neonate,the optimal diagnostic evaluation of the disease.

AIMS & OBJECTIVES: Optimal diagnostic evaluation of neonatal hypertension

MATERIALS AND METHODS:

27 years old primi,GDM on insulin,received 1 dose of antenatal steroids.AN scans-normal;She delivered a late pre term baby, GA- 33weeks, with a birth weight of 2170 grams.The baby cried after birth. Apgars 6/10, 8/10.Baby had respiratory distress at birth, intubated,one dose of surfactant given,extubated 24 hours later;from Day 4 of life,baby had increased Mean blood pressure,monitored & started on Tab nifidipine at 0.5mg/kg/dose;baby had cold stress at 10 days of life.

RESULTS:

Screening Echo- PFO left to right shunt ;good LV function Review after 1 year

Renal Doppler-

RK- 4.1cm ; normal echoes, PCS-normal, PS-14.5 mm, ED-6.5 RI-0.65

LK- 3.25mm Normal echoes. PCS-Normal ED-5.6 RI-0.67

Urine routine- 1-2 pus cells, 3-4 yeast cells, Albumin +; Urine c/s- enterococcus growth-s to Linezolid*14days

ROP- B/E zone IlI immature retina, review after 1 week, both eye tobramycin e/d 1 drops TDS

OAE- both ears-pass.Mother explained prognosis & risks of hypertension.Discharge weight - 1943g

S.aldosterone- 94.6 (5-90),Plasma rennin- 55.8 IU/mI (2.8-39.9),Aldosterone rennin activity- 1.70 (< 2.93)

Urine Na- 14,Urine K-20.4

Aldosterone renin ratio- 1.70

In view of increased urine potassium level,suspecting monogenic hypertension WGS has been sent.

CONCLUSION:

Neonatal hypertension is often missed or undiagnosed in infants admitted to the newborn nursery and is picked incidentally on routine follow-up visits. Early diagnosis and timely treatment are important in this population to prevent end-organ damage and adverse long-term sequelae. Renovascular,Renal parenchymal Disease,Pulmonary ,Cardiac, Endocrine, Neoplastic and neurological causes of hypertension has to be ruled out.After ruling out all these causes it is must to rule out Genetic causes of neonatal hypertension-monogenic hypertension, genetic study has been sent for this baby reports are awaited.

P 143

Title: Association of antenatal magnesium sulfate with gastro intestinal outcomes in preterm neonates < 32 weeks- A prospective cohort study .

Authors name: Dr Varalakshmi R , Dr Sahana Devadas

Background : Studies on gastrointestinal outcomes of premature babies whose mothers exposed to magnesium sulphate antenatally is limited and not analysed in our hospital.

Objective: To study the impact of antenatal magnesium sulphate administration on gastro intestinal system in preterm neonates less than 32 weeks (necrotising enterocolitis, spontaneous intestinal perforation and feed intolerance)

To determine time to reach full feeds (minimum 150 ml per kg per day) in pre term neonates born to mothers who received magnesium sulfate antenatally.

Methods: This study is a prospective cohort study of data collected on preterm infants (less than 32 weeks) admitted to inborn NICU of our tertiary care hospital, whose mother was given magnesium sulfate antenataly during the period between may 2023 to October 2024.

Neonates more than 32 weeks were excluded from the study.

Clinical examination , NEC grading will be done for the eligible babies and data will be collected . abdominal xray will be done to correlate the clinical findings and rule out other causes of NEC.

Reults: Out of 206 neonates followed up, 63% of them achieved full feeds of them 25 % achieved in 1st week. Only 32% of the neonates had feed intolerance in the form of vomiting and abdominal distension and one of them developed spontaneous intestinal perforation. Death due to gastro intestinal cause was reduced to 5 %.

Conclusion: antenatal magnesium sulfate administration to mother has clearly benefitted the neonates in earlier attainment of full feeds, lesser antibiotic course time, lesser feed intolerance and less death due to gastro intestinal cause.

P144. Extraction of Fractured Umbilical line: Novel approach avoiding cardiac intervention

Arunima B, DM, Sharanya P, MD, Nidhi Jain DM, Ashish Jain DM

Department of Neonatology, Maulana Azad Medical College and Associated Lok Nayak Hospital

ABSTRACT:

Background:

Umbilical lines are very crucial in the management of sick neonates and are lifeline for fluid and medication administration. Fracture and migration of the lines is very rare but preventable complication. Unidentified cases may lead to mortality, arrhythmias, thrombus formation, and perforation. For the fractured and migrated lines different approaches are used for extraction of the lines of which endovascular approach with fluoroscopy guidance is the most followed.

Case Report:

In A 1 kg preterm baby a 6 French umbilical venous line was fractured with superior migration, superior tip was lying just below the diaphragm. Initially supraumbilical approach under local anesthesia tried, however, line couldn't be extracted in view of superior migration.

Intervention:

The fractured umbilical line was extracted successfully by open surgical approach with retro hepatic exploration. As in our case and as well as in resource limited settings where there is delay or non-availability of interventional vascular surgery, open surgical approach is the best option available especially in the Extremely Low birth weight (ELBW) babies.

Conclusion

This is first of cases where open surgical removal of line was successful in an ELBW baby with challenging morbidities like sepsis and thrombocytopenia. Strict periodic surveillance of lines should be done by all the NICU staff, avoidance of sharp instruments during removal of lines and using fine scissors for suture removal may be the key measures to prevent such avoidable accidents.

Key Words: Umbilical Line, Migrated line,

P145.

ABSTRACT

TITLE: NEONATES WITH CONGENITAL DIAPHRAGMATIC HERNIA- A SINGLE CENTRE EXPERIENCE IN TERTIARY CARE HOSPITAL OVER 19 YEARS

AUTHOR: GOKUL KRISHNAN R, LAKSHMI V

AIM:

The aim is to study the demographic characteristics of CDH neonates and to analyze the prognostic factors determining mortality.

MATERIALS AND METHODS:

A retrospective cohort of CDH admitted at a tertiary care hospital admitted in NICU before undergoing surgery were included in the study during year 2005-2023. Babies admitted after surgery and diaphragm eventration were excluded from the study.

RESULTS:

43 cases (67.4% male, 53.5% inborn) formed the study cohort. Mean birth weight was 2674±479.67g and mean gestational age was 37.31 ±1.76weeks. 67.4% of cases were detected antenatally and 93% were left sided CDH. 83% of CDH babies were intubated at birth with 74.4% having shock requiring inotropes, 25.2 % requiring HFOV, 32.6% requiring sildenafil and 16.27% requiring iNO therapy. The survival rate was 65%. Last 5 years, survival rate is 79.5% with due to advanced treatment and well established guidelines. Postnatally detected CDH having lower ventilation days and decreased hospital stay. Predictors of poor survival included prematurity, herniation of liver or kidney ($P < 0.05$), low APGAR score (<6), low pH, high AaDO2, high oxygenation index and low partial pressure of oxygen during first 24 hours of life.

CONCLUSION:

Majority of the neonates with CDH at our centre were > 37 weeks and survival was 65%. The predictors of adverse outcome were prematurity, low Apgar score, high ventilatory settings and oxygenation index, low partial pressure of oxygen during first 24 hours of life. Postnatal detected CDH had 82% survival rates with lesser duration of ventilation and hospital stay.

P146.

Free paper category (Oral presentation)

Authors: Srikanth kandi, Satish saluja, Manoj Modi, Arun Soni, Neelam kler, Pankaj Garg, Anup Thakur, Madhuri Jhawar

Title: Bone mineral status of preterm babies ≤ 32 weeks POG and relationship between number of NPO days and incidence of hypophosphatemia

Affiliation: Department of Neonatology, Institute of Child Health, Sir Ganga Ram Hospital, New Delhi

Introduction: Metabolic bone disease of prematurity is a common occurrence among neonates admitted to NICU. Sick preterm neonates who are on prolonged parenteral nutrition are more prone to develop metabolic bone disease of prematurity. There is paucity of date regarding mineral status of preterm babies ≤ 32 weeks. The purpose of this study is to know the mineral status of preterm neonates ≤32 weeks and the effect of prolonged parenteral nutrition on the bone mineral status

Aims and objectives: To study the bone mineral status of preterm babies less than 32 weeks and evaluate the relationship between number of NPO days and incidence of hypophosphatemia

Materials and methods: We conducted a retrospective descriptive study in a level IIIB NICU from January 2017 to July 2024. All extramural neonates admitted before day-7 of life and both intramural and extramural neonates who survived for more than 7 days were enrolled. Demographic profile, Lowest serum phosphorus and calcium, highest value of alkaline phosphatase and number of NPO days data were retrieved from electronic medical records. Neonates enrolled in the study received inorganic/organic phosphates up to 60% of their parenteral nutrition duration

Results: A total of 512 neonates were included in this study. The mean(SD) birth weight and gestational age of study population was 1239 (370) g and 29.4 (1.8) weeks respectively. The mean(SD) of the lowest serum calcium and lowest serum phosphorus was 8.32(1.36) mg/dl and 5.13(1.93) mg/dl respectively, mean(SD) of the highest ALP value was 367.4(166.4) IU/L. Pearson's correlation coefficient between number of NPO days and incidence of hypophosphatemia was -0.661 (p value<0.001) Incidence of MBD at discharge was 9.7% (5 neonates out of 513).

Conclusions: Incidence of metabolic bone disease is 9.7% and there is moderate negative correlation between number of NPO days and incidence of hypophosphatemia.

Key Words: Metabolic bone disease, hypophosphatemia, Nil per oral

P147.

ABSTRACT

Free paper Category (Oral presentation)

Category-Intensive Care (IC)

Authors: **Madhuri Jhanwar (NNF-PB/L-10218),** Satish Saluja, Manoj Modi, Arun Soni, Neelam Kler, Pankaj Garg, Anup Thakur, Srikanth Kandi

Affiliation: Department of Neonatology, Sir Ganga Ram Hospital, New Delhi

Title: Phlebotomy Losses and Its Correlation with Red Cell Transfusion in Preterm Neonates ≤ 32 weeks Gestation

Affiliation: Department of Neonatology, Institute of Child health, Sir Ganga Ram Hospital, New Delhi.

Introduction: Blood transfusions in preterm neonates are influenced by factors such as gestational age and phlebotomy volume. Understanding the correlation between phlebotomy volume and transfusion rate can help in optimizing transfusion practices and limit iatrogenic blood loss.

Objectives:

Primary – To study the phlebotomy losses and its correlation with red cell transfusion in preterm neonates ≤ 32 weeks

Secondary – To study the correlation between red cell transfusion and pre-discharge serum ferritin level

Materials and methods: Case records of neonates born at ≤ 32 weeks gestation and admitted to the NICU between January 2017 and May 2024 were analysed retrospectively. Neonates who died or were discharged against medical advice within the first 7 days of admission and those admitted after 7 days of life were excluded from the study. Relevant demographic and clinical details including number of red cell transfusions, pre-discharge ferritin levels and volume of phlebotomy losses during NICU stay were retrieved from the electronic medical records.

Results: A total of 510 neonates were evaluated, with a mean (SD) gestational age of 29.4 (1.8) weeks and birth weight of 1239 (370) g. The median (range) phlebotomy loss was 7.8 (0.8 - 156) ml/kg. Overall, 35 % of these neonates required red cell transfusion during NICU stay. The percentage of neonates at each week of birth gestation from 24 to 32, who received blood transfusions were 100%, 66.7%, 84.4%, 66.7%, 50.8%, 33.8%, 25.4%, 19.4%, and 16.3%,

respectively. There was a significant positive correlation between phlebotomy volume and the number of transfusions ($r = 0.744$, $p < 0.001$). A moderate correlation was found between the number of blood transfusions and pre-discharge serum ferritin levels ($r = 0.439$, $p < 0.001$).

Conclusion: Approximately 1/3rd of very preterm neonates and 3/4th of extremely preterm neonates require red cells transfusion during NICU stay. There is a significant correlation between phlebotomy losses and need for transfusion.

Key words: Red cell transfusion, Phlebotomy losses, serum ferritin levels

P148.

Abstract

(Free Paper category)

Title: Quality Improvement Project to Decrease Unplanned Extubation in Mechanically Ventilated Neonates: Initial Gains

Authors: Mannat Verma (NNF- DEL/L-10170), Shachi Bhanuda, Neelam Kler, Pankaj Garg, Satish saluja, Arun Soni, Manoj Modi and Anup Thakur.

Affiliation: Department of Neonatology, Institute of child health, Sir Ganga ram hospital, New Delhi

Introduction: Unplanned extubation (UE) in neonates can pose serious and life-threatening complications. Quality Improvement (QI) strategies through implementation of potentially good practices, tested in plan-do-study-act (PDSA) cycles can reduce UE.

Aims and objectives: The aim of our study is to reduce UE rates in a level III B NICU by 40% from January 2024 to June 2025.

Methods: This QI project involves systematic implementation of change ideas to be tested in PDSA cycles and implemented from Jan 2024 – June 2025. The outcome measure of the study is UE rates per 100 ventilated days (Figure 1 Driver Diagram). Change ideas were tested till August 2024 for optimum endo-tracheal (ET) tube fixation bundles that include selection of correct size ET tube based on gestational age and weight, naso-tragus length based formula to fix ET tube to optimum insertional length and use of bed-side airway alert cards to sensitive the care-givers about risk of UE. PDSA cycles were conducted from January to March and June to August 2024. In April and May, the project was on hold due to change in leadership. The process measures that could be assessed till August 2024 were weekly compliance rates of proportion of infants intubated with correct tube size, to correct tube depth, and who had appropriate bedside airway alert cards. Data was analysed in QI software using Shewhart's chart.

Results

A total of 60 episodes of intubation were assessed during random audits conducted twice weekly. From January till August 2024, the compliance rates for correct ET tube size, correct ET tube depth and airway alert cards improved from 63% to 100 %, 64 to 100% and 47% to 71.4%

respectively. The mean compliance rates of these bundles improved from 57.6% to 90.4%. The UE rates decreased from 7.7/100 ventilated days to 3.6/100 ventilated days. However, these measures are not yet immune to random variation.

Conclusion: Implementation of QI strategies led to gains in compliance of process measures of ET tube fixation bundles and outcome measure of UE. Random variations in the results need to be decreased by holding on the gains and further implementation of other change ideas.

Key words: Plan-do-study-act, change idea and endo-tracheal tube.

Figure 1 (Driver diagram)

P149.

Title:

Effect of Intrahospital neonatal transport on Thermoregulation in a Modern Hospital designed with centralized air conditioning. A Prospective Observational study.

Authors:

1 Dr John David Deva Arul, 2 Dr Vaideeswaran M, 3 Dr Vivek S , 4 Dr Rajeshwari N, 5 Dr Jayachandran K

1 Junior Resident, 2 Senior Consultant Neonatologist, 3Consultant Neonatologist , 4Senior Consultant Pediatrician and Neonatologist, 5Head of the Department

Place of the Study: Dr. Kamakashi Memorial Hospital, Pallikarani, Chennai

Introduction:

Modern hospitals which are designed with advanced centralized air conditioning poses a significant challenge in neonatal thermoregulation during the intrahospital transport.

Aim & Objectives:

Our aim was to identify the effect of intrahospital transport on neonatal thermoregulation. Our objective was to identify the incidence of moderate hypothermia (Temperature < 36.0°C) at the end of intrahospital transport among neonates.

Material & Methods:

We did a prospective observational study among healthy neonates who were born in our tertiary care unit at ≥ 34 weeks of gestation and roomed in with mother and also subjected to intrahospital transport within 72 hours of life for any diagnostic or therapeutic purpose. Enrolment was done between March 2024 and August 2024. After ensuring normothermia, neonates were transported using an infant trolley with conventional swaddle by warm towel and a cap. Axillary temperature was measured at the initiation and at the end of transport using digital thermometer by a trained nursing person and recorded for analysis.

Results:

Out of 1083 transport occurred, with a median transport time of 10 minutes, 4% (42) had moderate hypothermia and 40% (238) had cold stress at the end of transport. Mean initial temperature was 36.73°C and final temperature was 36.67° C with a mean difference of 0.06°C.

Conclusion:

In conclusion, moderate hypothermia can occur even during short intrahospital transport. Hence, ensuring normothermia before transport initiation, using warming devices during the transport and proper training of health care workers involved are essential for thermoregulation focussed intrahospital transport.

P150.

TITLE:

Stool colour as an adjunct for Triaging jaundiced Infants for Phototherapy (STrIP) score in assessing neonatal hyperbilirubinemia- an observational study in a tertiary care centre

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Conflicts of interest: None declared

ABSTRACT:

Introduction:

Jaundice in neonates is one of the most common conditions needing medical intervention. As unconjugated bilirubin in excess is neurotoxic, early recognition and prompt management of neonatal jaundice can prevent kernicterus and its sequelae. Conditions which delay clearing of meconium are known to exaggerate serum bilirubin levels. It is noticed that in clinically jaundiced neonates who eventually needed phototherapy, the colour of the stools appeared less matured (more greenish) for their postnatal age in contrast with similarly icteric babies who had more matured looking stools. With this observation, it is hypothesized that quantity of bilirubin in the gut and enterohepatic circulation influence serum bilirubin levels. Hence, addition of stool colour could be a good adjuvant to clinical assessment of neonatal jaundice especially in resource limited settings.

Objective:

To compare the Kramer scale with the STrIP score in correlation with the serum total bilirubin values.

Methodology:

This was a prospective observational study conducted in a tertiary care neonatal unit. Neonates with a gestation of 35 weeks and above were recruited. Jaundiced neonates were assessed by

Kramer's scale and STrIP score (Kramer score plus strip weight). The values were compared with serum bilirubin levels for agreement.

Results: The newly developed STrIP score had a good agreement with measured serum bilirubin levels compared to Kramer's scale alone.

Conclusion: The STrIP score can be an easily accessible and cost-effective method to assess and triage jaundiced babies requiring phototherapy at community level management and follow up.

Guide- Dr.Soundararajan (HOD and prof), Dr.Manasi Garg (Prof.)
Co guide- Dr. Kalaivani Anantharaman (Assistant Prof.)
Presenter- S. Mahalakshmi (Second year junior resident)
Mahatma Gandhi Medical college and Research Institute, Pondicherry

ABSTRACT:

TITLE:

POSTNATAL WEIGHT LOSS PATTERN IN LATE PRETERM AND TERM NEONATES AND ITS ASSOCIATION WITH EARLY NEONATAL MORBIDITY IN EXCLUSIVELY BREASTFED NEONATES - A PROSPECTIVE COHORT STUDY

INTRODUCTION:

Neonatal weight loss of > 10% of the birth weight is considered as a sign of excessive weight loss. It is commonly associated with hyperbilirubinemia and hypernatremic dehydration which can lead to seizures, cerebral oedema, intracranial haemorrhage and failure to thrive. Hence the association between the weight loss patterns and its resultant comorbidities were seen in inborn, exclusively breastfed term and late preterm neonates.

AIM:

To study the postnatal weight loss pattern and the comorbidities like hyperbilirubinemia and hypernatremic dehydration among exclusively breastfed late preterm and term babies.

MATERIALS AND METHODS:

This cohort study includes 2 groups of inborn, exclusively breastfed, late preterm and term neonates after excluding neonates with congenital defects/ co-morbidities with feeding. The outcome measures assessed were the association between the weight loss patterns and early

neonatal morbidity like hyperbilirubinemia and hypernatremic dehydration in term and late preterm neonates.

RESULTS:

During the study period 278 eligible neonates were enrolled with 139 in each group. The gestational age, mode of delivery, associated maternal issues, use of galactogogues and the newborn's input output charting were considered among both groups. Serum electrolytes and serum bilirubin were estimated in all babies who lost >10% of their birth weight and to determine the probability and association between hypernatremic dehydration and hyperbilirubinemia among the 2 groups. The term group (32.2%) born via LSCS (78%) were predominantly affected with excessive weight loss and its associated features of hypernatremia (42.1%) was affected more in term babies and hyperbilirubinemia (55.3%) was found to be more in late preterm group.

CONCLUSION:

Term babies born via LSCS are prone to have excessive weight loss during their early neonatal period and is associated with hypernatremia. However, hyperbilirubinemia is more in late preterm group.

P151.

Title: Neurodevelopmental outcome of preterm infants with Retinopathy of prematurity

Authors: Sadvini B J, Sahana Devadas , Gayathri Devi

1. Junior Resident, Department of Paediatrics, Bangalore Medical College and Research Institute.
2. Professor and HOD, Department of Paediatrics, Bangalore Medical College and Research Institute.
3. Professor, Department of Paediatrics , Bangalore Medical College and Research Institute.

Place of Study: District early intervention centre,Vani Vilas Hospital, Bangalore Medical College and Research Institute.

Introduction : Globally, ~11.1% of births are premature. Retinopathy of prematurity (ROP) is the second leading cause of childhood blindness in the world and studies on neurodevelopmental outcomes of premature babies with ROP is limited, also not analyzed in our hospital.

Objective: To determine the association between neurodevelopmental outcome and ROP in premature infants.

Methods: This study is a retrospective analysis of prospectively collected data on preterm infants(25-34 weeks) admitted to Inborn NICU of our tertiary care hospital, who underwent ROP Screening during November 2021 to December 2022. Additional inclusion criteria included at least one behavioral and motor assessment during 6-24months of CGA by Hammersmith infant neurological examination. Infants of GA >34weeks and/or Birth weight >1.8kg, children with major congenital malformation or syndromes, whose parents didn't consent to participate were excluded in the study. Odds ratio was analyzed for different predisposing factors of ROP.

Results: Of 1200 infants screened for ROP, 952 babies met inclusion criteria and were characterized as no ROP= 905 , Type 1(requiring treatment) = 38, Type 2(not requiring treatment) =9. Significantly more males were affected with NDD with no significant association of GA, birth weight, RDS, IVH between NDD and no NDD group. Babies with ROP were found to have significant risk for neurodevelopmental delay compared to the babies with no ROP (p= 0.025), but no much difference was found in type 1 and type 2 ROP groups(p= 0.37).

Conclusions: Our study shows that ROP severity is not associated with worse neurodevelopmental outcomes, as assessed by HINE score after correcting for GA and BW. But any ROP by itself is a risk factor for poor neurodevelopmental outcome.

152.

Abstract:

TITLE: Post surfactant Lung Ultrasound score as a Prognostic tool in Preterm neonates with Respiratory distress syndrome- A Prospective observational study.

AUTHOR NAMES :

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3.Dr.Venkatesh, consultant Neonatologist, Manipal Hospital, Bangalore.

Place of Study: Department of pediatrics, VaniVilas Hospital, Bangalore Medical College and Research Institute, Bangalore.

INTRODUCTION:

Lung Ultrasound has higher specificity and sensitivity in diagnosing Respiratory distress syndrome and to predict the need for Surfactant in Preterm neonates. The Usage of Lung Ultrasound for prognosis and the changes in the Lung Ultrasound score post surfactant is not evaluated much.

AIM:

To evaluate the changes in Lung Ultrasound score post surfactant in Preterm neonates with respiratory distress syndrome.

MATERIALS AND METHODS:

This is a single centre Prospective observational study conducted from October 2023 to August 2024 in our tertiary care referral Hospital. Preterm neonates (<34 weeks) with RDS were included in the study after parental consent. Lung Ultrasonography was performed before , 2 hours, 6 hours, 12 hours post surfactant. Resulting Lung Ultrasound score was analyzed.

RESULTS:

Total 64 Preterm neonates with Respiratory distress syndrome have received surfactant. The mean (SD) gestational age was 30.03+- 2 .2 weeks. Mean Birth weight was 1.21 +- 431gms. The mean age of first dose of surfactant was 1.3 +- 1 hour.8(12.5%) babies required second dose of surfactant. 87.5% of Preterm neonates with single dose of surfactant had LUS score of 0 at 12

hours of Life. No difference was found in LUS Profiles before and 2 hours post surfactant (P=0.17). Significant difference was noted 6 hours, 12 hours(P=0.001) post surfactant. The receiver Operating characteristic Analysis for the Lung Ultrasound score at 6 hours yielded area under the curve of 0.85. A LUS score if >_ 7 at 6hours showed a sensitivity of 96%, specificity of 72% for need of second dose of surfactant.

CONCLUSIONS:

This study showed Usage of Lung Ultrasound score for Prognosis Post surfactant deciding need for second dose of surfactant, to wean off from Respiratory support. Point of care Lung Ultrasound is a cheap, non invasive , repeatable diagnostic and prognostic tool Preterm Respiratory distress syndrome.

P153

STUDY TITLE – PERINATAL AND NEONATAL OUTCOMES IN ACUTE FATTY LIVER OF PREGNANCY (AFLP)

Nandhini.M1, Mintoo Tergestina1, Leenath Thomas2, Kurian Anil Kuruvilla1 , C E Eapen2, Ashish Goel2, Santhanam Sridhar1, Manish kumar1, Santhosh Joseph Benjamin3, Manisha Madhai Beck3, Kavitha Abraham3, Swati Rathore3, Sowmya Sathyendra4

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Abstract

Introduction:

Acute fatty liver of pregnancy(AFLP) is a mitochondrial hepatopathy commonly occurring in the third trimester of pregnancy.

Aims & Objectives:

To identify the perinatal and neonatal outcomes in mothers with AFLP, to determine the morbidity pattern of babies born to mothers with AFLP.

Materials and Methods:

We conducted a retrospective study by reviewing the electronic medical records of all pregnant women with AFLP at a tertiary-care institute in Southern India over 24 years. Demographic, clinical and laboratory data of mothers and their babies were extracted.

Results:

AFLP was identified in 83 (12%) of 597 pregnancies complicated by hepatic dysfunction. The mean(SD) maternal age was 24.3±4.49 years, 59(71%) primigravida; mean gestational age 36.2±2.02 weeks. Pregnancy was terminated in 59 (71%) mothers for deteriorating maternal condition. Delivery occurred by cesarean section in 60(72%) pregnancies; male babies 58 (64%); sixteen(17.58%) neonates were stillborn. There were preterm births in 49(50%), with median gestation of 35 weeks.32 babies (43.8%)required resuscitation at birth with umbilical cord pH less than 7.0 in 12 babies (16.4%).Metabolic acidosis was seen in 27 babies(36.9%), hypoglycaemia in 12 babies (16.4%). Other morbidities were increased need of respiratory support (n = 19), myocardial dysfunction (n =25), requirement of prolonged parenteral nutrition (n =19). Five babies died, of which two were early neonatal death due to severe myocardial dysfunction with median age of death at 3.5 days.

Conclusions:

The increased risk of stillbirths, need for extensive resuscitation, greater incidence of metabolic acidosis and other neonatal comorbidities warrants stringent fetal surveillance and expert neonatal management.

P154.

TITLE: TWISTED BABY WITH A TWISTED GENOTYPE

AUTHORS: DR. AJAY.R, 2nd year MD PAEDIATRICS

DR. SRIDEVI A NARAAYAN, PROFESSOR OF PAEDIATRICS

DR. SUGANYA, ASSISTANT PROFESSOR OF PAEDIATRICS

BACKGROUND: A neonate presenting with posturing during newborn period - a possibility of dystonia should be considered.

CLINICAL PICTURE: A male newborn, cried after tactile stimulation, APGAR 7/10 □ 8/10, with birth weight of 2.7kg had episodes of posturing of all 4limbs at day 2 of life. These were treated as seizures with anti-epileptics and was discharged. At home these episodes were increasing and progressed to involve back muscles. On readmission, child had extensive arching of back with cry lasting for 20-30 seconds. These episodes were provoked by sudden startle noises and painful stimulus. Resolved spontaneously. Child was started on anti-spasmodics and skeletal muscle relaxants. Lactate was elevated - started on mitochondrial cocktail. MRI brain – suggested molybdenum cofactor deficiency. Child was planned for whole exome - mitochondrial gene sequencing - a novel variant of eEF1B2 gene mutation. The child was discharged against medical advice due to the family's personal reasons. On tele-follow up it was found that the child succumbed after day60 of life.

DISCUSSION: Common causes of neonatal onset dystonia include HIE, KERNICTERUS, ENCEPHALITIS, TETANUS, METABOLIC DISEASES and INHERITED PRIMARY DYSTONIAS (DYT gene). EEF1B2 gene codes for eEF1Bα, subunit of eEF1B complex. eEF1Bα has guanine nucleotide exchange activity. Thus helps in the regeneration of eEF1A-GTP for the next elongation cycle. However very minimal literature and research articles being available for phenotypic presentation, this refractory dystonia of this would be linked to eEF1B2 gene due to the possibility of defective protein translation which may be the reason for this presentation.

P155.

TITLE:

Vitamin D toxicity in Preterm Infants Receiving Plant protein based Human Milk Fortifier: A Retrospective Cohort Study

Authors

Dr Punith M N

Dr Brinda E

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Dr Srinivasa Murthy C L

Place of study:

Division on Neonatology, Aster Women and Children Hospital, Whitefield, Bangalore, India.

Introduction:

Vitamin D, a fat-soluble vitamin, is critical for bone health and plays a crucial role in calcium and phosphorus metabolism. The increasing prevalence of vitamin D deficiency in preterm, has prompted healthcare providers to fortify human milk with vitamin D to ensure adequate intake. However, this fortification, while beneficial in preventing deficiency may also pose risks of Vitamin D toxicity.

Aims and objective:

In the present study, our objective is to determine the prevalence of Vitamin D toxicity in preterm infants receiving Plant protein based HMF.

Material and Method:

This study was a retrospective analysis of prospectively collected data from a tertiary care center over a span of 1 year period. Vitamin D levels of all extreme preterm babies (<28weeks) who were on EBM with Plant protein based HMF for a period of more than 8 weeks were included in study and data were obtained from NICU database.

Results:

A total of 13 Extreme preterm infants were included in the study. Serum levels of vitamin D 25 OH levels was measured at 8 weeks of PMA, Of these 9/13 (69%) had vitamin D levels >100 ng/ml with average levels being 120 ng/ml.

Conclusion:

This study highlights the potential risk of vitamin D toxicity associated with the use of plant protein based HMF and underscores the pressing need for improved regulations regarding the vitamin D content in food-grade HMF. Ongoing research and clinical vigilance are crucial to ensure concerning vitamin D levels in HMF and Collaborative efforts among researchers, clinicians, and regulatory bodies will be crucial in establishing robust guidelines that ensure both the efficacy and safety of human milk fortifiers.

P156.

Abstract/Paper Category – Free Paper

Subspecialty h. Infectious Diseases (ID)

Title

EARLY ONSET SEPSIS IN SOUTH INDIAN NEWBORNS

By

Dr. Grace Lalana Christopher

Place of study

Shifaa Hospital, Queens Road, Bangalore

Abstract

Introduction

Early onset neonatal sepsis is one of the leading causes of perinatal and neonatal mortality and clinicians have to rely on a high index of clinical suspicion as there is no ideal confirmatory diagnostic test within 24 hours of birth.

Aims & Objective

The objective of the study was to identify various ante-partum, intra-partum and neonatal risk factors associated with Early Onset Sepsis (EOS) in South Indian newborns.

Material & Methods

The study comprised of 2,750 consecutive singleton live births with 244 "EOS cases" and 2506 "Controls" during the period Jan 1st 2015-May 31st 2017. Sources of data were Labor room records, NICU register and neonatal charts. Various risk factors presenting at different intensity levels as odds ratio (OR), mean difference (95% Confidence Interval), number or percent (%) by binary logistic regression and statistical significance set at 0.05 using SPSS Version 21.

Results

The incidence of early onset sepsis was 9%, predisposing factors include younger mothers <24 years (P>|z|=0.002), Primigravida (P>|z| <0.001), Premature rupture of membranes (PROM) (P>|z| <0.001), Gestational diabetes (P>|z| <0.008), Emergency LSCS (P>|z| <0.001), neonatal risk factors included Low Birth Weight ≤2499g (P>|z| <0.001), prematurity ≤36 weeks (P>|z| <0.001) and male gender (P>|z| <0.008).

Conclusion

The incidence of EOS was 9% Various high-risk factors for EOS include young mothers, primigravidae, obstetric complications of PROM and Gestational diabetes, including those born by emergency LSCS, neonatal factors being low birth weight ≤2499g, prematurity <37 weeks and male gender.

P157.

Transient Abnormal Myelopoiesis OR AML M7 A Diagnostic And Therapeutic Conundrum In A Neonate: A Case Report

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ABSTRACT:

Background: Children with Down syndrome have a unique predisposition to develop Acute Myeloid Leukemia-M7 (AML-M7). TAM and AML-M7 are caused by co-operation between trisomy 21 , which itself perturbs fetal hematopoiesis and acquired mutations in the key transcription factor gene GATA1. 10 % cases of TAM in neonates progress to AML-M7 later on (Mean age: 6 months) , there is paucity in literature of AML-M7 presenting in the neonatal period.

Case Report: A 1 day old neonate with phenotypic features suggestive of down syndrome, presented with bleeding manifestations with enlarged and firm liver on investigating baby had high leukocytic count (2.6 lakh/microL) with 88% blast cells and abnormal coagulation profile requiring FFP transfusion. Immunophenotyping and morphology was suggestive of AML-M7.

Management: As baby had life threatening symptoms. Hence, inj cytarabine 1.5 mg/kg/day was given for 7 days. Blasts cells were decreased to 2 % post-treatment; however baby had persisting pancytopenia requiring multiple pRBC and platelet transfusions. Blasts cells further increased to 10 % on (DOL-20), however there is lack of literature and expert opinion in neonatal age-group , about AML-M7 chemotherapy regimen.

Conclusion: It is difficult to differentiate TAM and AML M7 in the neonatal period, There is an uncertainty: Where TAM ends and ML-DS starts and some cases of TAM evolve straight to ML-DS or have a very transient, partial remission.

Key Words : TAM (Transient abnormal myelopoiesis), AML-M7, Down Syndrome.

P158.

Abstract/Paper Category – Free Paper

Subspecialty o. Miscellaneous. Birth Asphyxia

Title

BIRTH ASPHYXIA IN SOUTH INDIAN NEWBORNS

By

Dr. Grace Lalana Christopher

Place of study

Shifaa Hospital, Queens Road, Bangalore

Abstract

Introduction

Birth Asphyxia is the leading cause of preventable proportion of neonatal morbidity and mortality to formulate preventive strategies and management.

Aims & Objective

Incidence and influence of various antepartum, intrapartum and neonatal risk factors associated with birth asphyxia.

Material & Methods

The study comprised of 2,750 consecutive singleton live births, with 583 "Cases" of birth asphyxia and 2167 "Controls" or normal newborns. Sources of data were Labor room and neonatal records. Various risk factors associated with birth asphyxia presented at different intensity levels as odds ratio (OR), mean difference (95% CI), number or percent (%) by binary logistic regression, and statistical significance set at 0.05 using SPSS Version 21.

Results

The incidence of birth asphyxia was 21.2%, peak births of cases occurred at 39 weeks, contrasted with 38 weeks in controls. Various risk factors include primigravida, Pregnancy Induced Hypertension (PIH), P=0.0001, breech presentation P=0.0001. Meconium staining of liquor P=0.0001, oligohydramnios P=0.0001. Cord abnormalities P=0.0001. Emergency Lower Segment Cesarean Section P=0.0001, while elective or planned LSCS had low risk of birth asphyxia Neonatal factors include prematurity P=0.032 and Low Birth Weight <2500g P=0.0001.

Conclusion

High incidence 21.2% of birth asphyxia requires identification of various high-risk factors during antepartum, intrapartum and neonatal factors in formulating preventive strategies resulting in reduction of birth asphyxia, thus improving quality of life in survivors.

P159.

ABSTRACT FOR FREE PAPER

PROPORTION OF RECURRENCE OF CLINICALLY SIGNIFICANT APNEA AMONG NEONATES OF GESTATIONAL AGE 28 TO 32 WEEKS ON STOPPING CAFFEINE AFTER AN APNEA-FREE PERIOD OF 7 DAYS: A PROSPECTIVE OBSERVATIONAL STUDY

Structured abstract:

Introduction: Preterms can develop apnea either due to apnea of prematurity or due to secondary causes. Caffeine is the drug of choice for apnea of prematurity (AOP). Though there is a definite guideline to start caffeine in ≤ 32 weeks, there is no uniform consensus on when to stop caffeine especially in very preterms between 28-32 weeks, whether it is at 34 weeks or early after an apnea-free period of 7 days. The former choice can prolong the use of caffeine unnecessarily in many newborns.

Objective: To estimate the proportion of recurrence of clinically significant apnea among neonates of gestation 28–32 weeks on stopping caffeine after an apnea-free period of 7 days.

Methodology: This was a prospective, observational study over a period of one year. Inborn preterms of gestation between 28 and 32 weeks admitted to the neonatal intensive care unit from April 2023 to May 2024 were included in this study after ethical clearance. Injection caffeine citrate was started for all. Caffeine stopped after 7 days of apnea-free period if they are off respiratory support then. If apnea recurred, it was investigated for secondary causes; if no definite cause was found, it was diagnosed as apnea of prematurity, and caffeine therapy was continued.

Result: Out of the total 300 neonates enrolled, 285 were available for primary outcome analysis. Among 285 neonates, 109 (38.2%) developed a recurrence of apnea; out of these, secondary causes were the reason for apnea in 75 (26.3% of total) cases, and 34 cases (11.9% of the total, CI: 8.4%-16.3%) developed apnea due to AOP. Among the secondary causes, late-onset sepsis predominated (41.33%). The median day of recurrence of AOP was 7 days after stopping caffeine.

Conclusion: Even though there was a recurrence of apnea in 38.2% of the preterms between 28-32 weeks of gestation after stopping early following an apnea-free period of seven days, the recurrence of apnea of prematurity was only 11.9%. Birth weight less than 1250 grams was a significant predictor for the recurrence.

Keywords: Apnea, caffeine, neonate, prematurity.

INTRODUCTION:

Apnea is defined as a temporary cessation of breathing or airflow for more than 20 seconds. Apnea of shorter duration is considered "significant" if it is associated with a decrease in oxygen saturation (SpO2) to less than or equal to 80% to 85% or with bradycardia (heart rate less than 100 beats/min. Preterm infants are more prone to apnea due to the developmental immaturity of their respiratory centers, and that is called apnea of prematurity (AOP). The incidence of AOP is inversely related to gestational age and birth weight. Seven percent of neonates born at 34 to 35 weeks gestation, 15% of those between 32 and 33 weeks, 54% of those between 30 and 31 weeks, and nearly all infants born at <29 weeks gestation or <1,000 grams exhibit AOP. Generally, it will resolve by 34 weeks but can last up to 40-44 weeks of PMA. For many years, methylxanthines have been the mainstay of pharmacologic care for apnea of prematurity, both in prevention and treatment. Caffeine citrate is chosen over theophylline due to its longer half-life, greater therapeutic index, and absence of the requirement for drug-level monitoring.

In general, caffeine is recommended as a prophylaxis therapy for AOP for all infants born at less than or equal to 28 weeks gestation. Some recommend giving caffeine prophylaxis to all infants between 29 and 32 weeks because most of these infants will have apneic events. Beyond 32 weeks, clinical practices vary as they have fewer chances of apnea and should be considered in infants of less than or equal to 34 weeks gestation when there are symptoms of AOP.

Caffeine is the drug of choice for apnea of prematurity (AOP). It is one of the most prescribed drugs in neonatal intensive care units (NICU). Although there is substantiation for early initiation of caffeine, when to discontinue the therapy is largely unknown. There are very few controlled trials reported so far on the duration of therapy and its effects on the occurrence of clinically significant apnea.

Most clinicians discontinue caffeine around 33 to 34 weeks of corrected gestational age (CGA) or if the infant has been apnea-free for more than or equal to 7 days. It is generally acceptable to discontinue caffeine between 32 weeks and 34 weeks of CGA if there have been no apneic events requiring intervention over the previous 5 to 7 days, but whether we can stop early is still a debate. In less than 28 weeks, most often prolonged respiratory support is required, have high comorbidity, and require longer duration of caffeine citrate. Longer duration caffeine therapy has more side effects (feed intolerance, tachycardia, dysrhythmias, seizures, increased metabolic demand leading to diminished preterm growth, etc.), is more costly, and has a prolonged hospital stay as compared to short-course caffeine therapy . There is only one reported study so far comparing the two regimens of caffeine therapy: whether to stop caffeine citrate after 7 days of apnea-free period or to continue till 34 weeks. One published study from South India by Raj et al. Compared the short-course versus longer-duration caffeine therapy (In short course

caffeine was stopped after 7 days of apnea-free period, in longer duration caffeine continued till 34 weeks of PMA) In this study, they found that the proportion of significant apnea in two groups was almost similar (15% versus 13%). Lorch et al., in a retrospective cohort study of 1400 infants less than 34 weeks of birth gestation, reported that an event-free interval of 5-7 days successfully predicts the resolution of apnea in 94 to 96% of cases.

Hence, we planned this study to find out the proportion of neonates between 28 and < 32 weeks gestation having clinically significant apnea and apnea of prematurity when caffeine is discontinued after 7 days of apnea-free period and also to find out the predictive factors associated with the recurrence of AOP.

AIM & OBJECTIVE:

To estimate the proportion of recurrence of clinically significant apnoea among neonates of gestation 28-32 weeks on stopping caffeine after an apnoea free period and off respiratory support.

METHODOLOGY:

Our study was a prospective, observational study (protocol registered under the Clinical Trials Registry of India no. **CTRI/2023/09/057347**) in a NICU of a referral tertiary care center, over 1 year.All inborn preterm of gestation between 28-32 weeks except with major congenital anomaly from April 2023 to March 2024 were included in this study after ethical clearance. Caffeine citrate is administered at loading dose 20 mg/kg intravenous followed by10mg/kg maintenance dose. Babies were monitored using Masimo pulse oximeter. Caffeine stopped after 7 days of apnoea free period and off respiratory support. Generally incidence for apnoea after stopping caffeine for 28 to 32 week is 25% (Armanian M et al). Only published study shows proportion of clinically significant apnoea after stopping caffeine 15% (Raj et al.). We assume that proportion of neonates needs to restart caffeine was25%, with precision of 20%.Hence with 80% power and alpha error of 5%, sample size was 300.

Proportion of neonates with recurrence of clinically significant apnoea were analysed and caffeine citrate restarted after ruling out secondary causes of apnoea. Secondary causes of apnea was ruled out using baseline investigations like sepsis screen, serum electrolytes, nasopharyngeal swab (to rule out bronchiolitis), Neurosonogram(to rule out IVH) and ECHO (to rule out hsPDA).Data entered in Microsoft excel and analysed using SPSS-27.

Operational Definitions

1. Apnea is usually defined as a cessation of breathing for 20 seconds or longer or a shorter pause accompanied by bradycardia (HR<100/min), pallor or cyanosis.

2. Significant apnoea defined as a drop in saturation<80% and any one of the following-

(a)decrease in heart rate to <100/min

(b)poor respiratory effort requiring PPV.

(c)need for O2 supplementation, HFNC, CPAP, and Mechanical ventilation.

3. Significant IH spell: Intermittent hypoxic spell >10/day (spo2<90 without bradycardia).

4. Protocol for prophylactic Caffeine therapy: Caffeine citrate was administered prophylactically at a loading dose of 20 mg/kg intravenously followed by 10 mg/kg/day maintenance dose intravenously to all neonates ≤32 weeks immediately after admission.

5. Protocol for stopping caffeine: After 7 days of apnoea-free period and if the baby was off respiratory support caffeine citrate was stopped.

6**. Protocol for restarting caffeine**:

Caffeine citrate was reloaded with 20mg/kg and was investigated for secondary causes. If no secondary cause was identified, the apnea was considered as AOP, and caffeine was continued till again 7-day apnoea-free period. In apnea due to secondary causes caffeine was not continued.

STUDY PROTOCOL:

RESULT:

Among the 317 babies between the gestational age 28 to ≤32 weeks born during the study period 300 babies were enrolled into the study. Out of the 300, 285 babies were available for analysis of the primary outcome. Two babies expired after 28 days of life before getting discharged. Finally, 283 babies were discharged. Among the 285 babies,109 (38.2%, CI: (32.6%-44.2%)) developed clinically significant apne: Study flow chart showing patient selection process, inclusion and exclusion

Exclusion

Flow chart showing follow up and outcome in study participants:

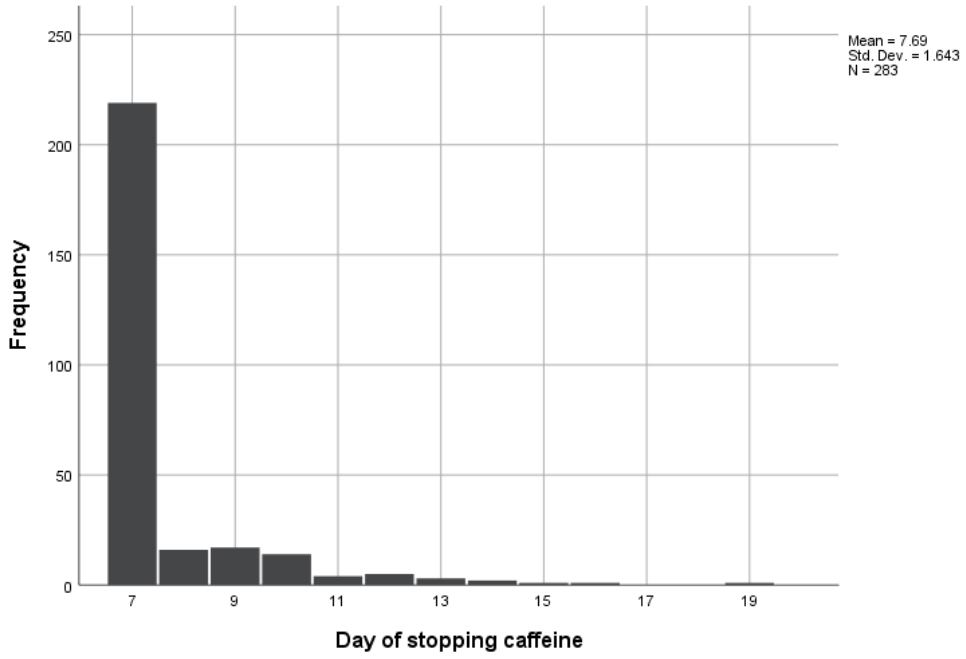
BASELINE CHARACTERISTICS OF THE STUDY POPULATION(n=300)

Baseline characteristics of the study population

Variable	**n (%), Mean (SD)**
Gestation agea	30.67(1.22)
Gestation age<30 weeks	102(34.1%)
Birth weight a	1301.19 (298.42)
Birth weight<1000grm	47(15.7%)
Birth weight<1250gm	136(45.3%)
Cesarean section	223(74.3%)
Male gender	120(40%)
SGA	44(15.6%)
Complete antenatal steroid	138(46%)
Median day of stopping caffeine b	7(0)

a - Mean (SD), b Median (IQR)

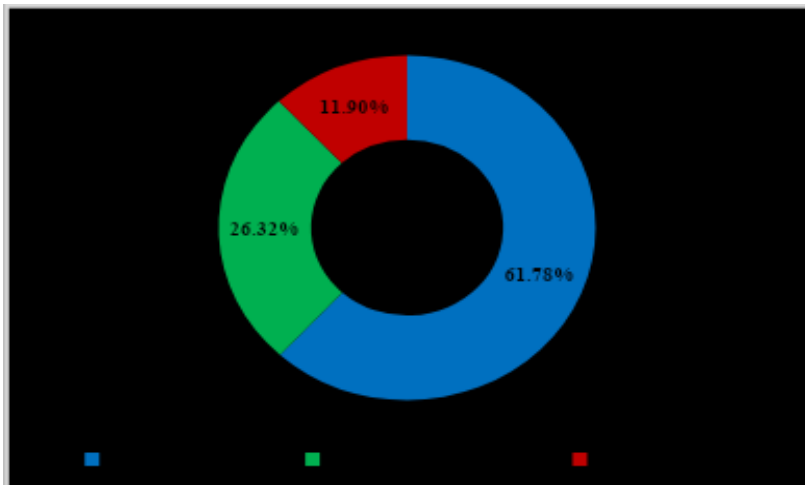
The bar diagram showing the day of first attempt of stopping caffeine in the study population.



Out of 285 neonates analysed 109 neonates (**38.2% , CI : 32.6%-44.2%**) developed recurrence of apnea on stopping caffeine citrate.

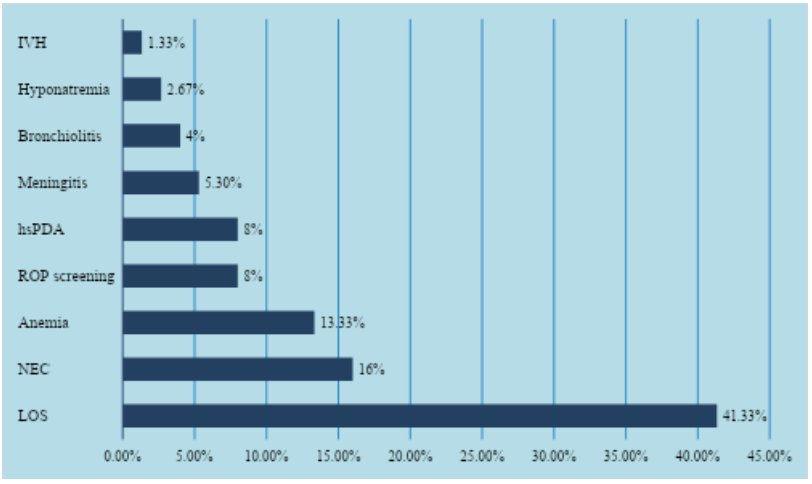
On further evaluation, out of these 109 neonates who have a recurrence of apnea, the reason for apnea was secondary causes in 75 neonates constituting 26.32% of the total 285 neonates. Rest 34 of those who had recurrence of apnea , it was due to apnea of prematurity constituting 11.9% of the total 285 neonates(CI 8.4- 16.3%) . For them caffeine bolus was given and then therapy was continued till again an apnea-free period of 7 days. For the rest, caffeine therapy was not continued. The proportion of recurrence of apnea due to apnea of prematurity and apnea due to secondary causes are given below in figure.

Figure : Proportion of recurrence of apnea



The secondary causes for recurrence of apnea are as shown in figure below.

Figure: Bar diagram showing secondary causes

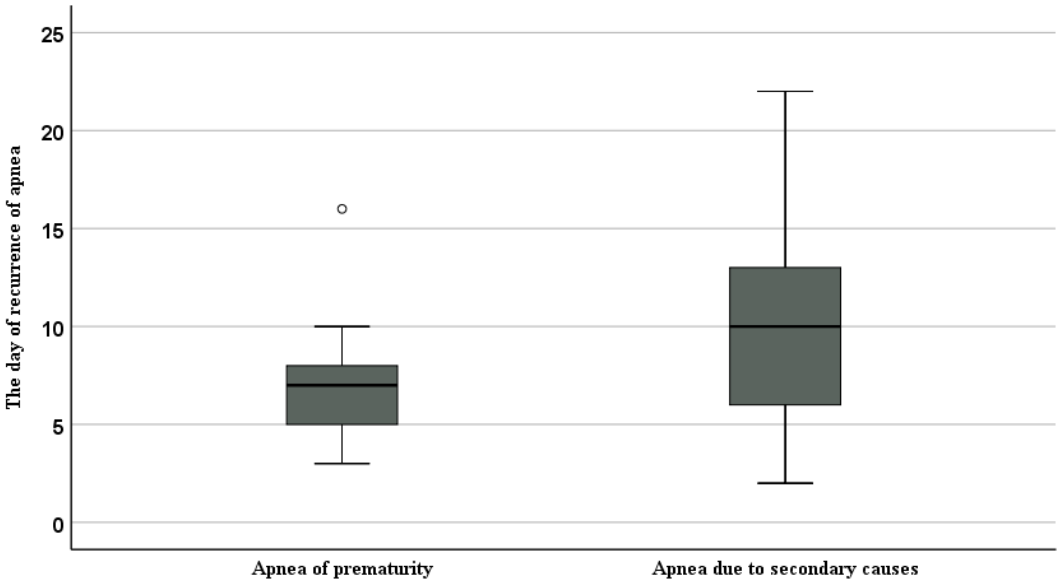


LOS: Late onset sepsis, NEC: Necrotizing enterocolitis, ROP: Retinopathy of prematurity, hsPDA: Hemodynamically significant patent ductus arteriosus, IVH: Interventricular hemorrhage

- Late onset sepsis was the commonest reason for recurrence of apnea, followed by NEC and anemia.

The day of recurrence of apnea after the first attempt of stopping caffeine in neonates with apnea of prematurity and apnea due to secondary causes are shown in figure below.

Figure: Box and whisker plot showing the comparison of the day of recurrence of apnea after the first attempt of stopping of caffeine in neonates with apnea of prematurity and apnea due to secondary causes.



DISCUSSION:

Caffeine is recommended as the prophylactic and treatment therapy for apnea of prematurity and the guidelines suggest its use in all neonates less than or equal to 32 weeks as early as within a few hours of birth. But practices differ considerably across centers regarding when to stop it, with some using a corrected gestational age of 34 weeks or others a 7-day apnea-free period whichever is earlier. Extreme preterm (≤28 weeks) may require prolonged therapy even beyond 34 weeks. But for babies between 28 to ≤32 weeks this may not be necessary. So, this study was conducted to study the recurrence of apnea of prematurity in the age group of 28 to ≤32 weeks after early stopping of caffeine after an apnea-free period of 7 days. In this study, the mean gestational age of the study population was 30.67 (SD 1.22) weeks. The mean birth weight was 1302.19 (SD 298.42) grams. The female: male ratio was 1.5:1 and 74.3% of the babies were born via LSCS. Complete Antenatal steroid coverage was only 46%. ELBW constituted 15.7% and 45.3% were below 1250 grams. In this study, caffeine was stopped after an apnea-free period of 7 days if the babies were off respiratory support. So, in 77.5% (n=221/285) of our study population, the first attempt of stopping caffeine could be done on day 7.Among 285 neonates, though 109 (38.2%) neonates developed recurrence of apnea on stopping caffeine after an apnea-free period of 7 days, in only 34(11.9%, CI:8.4-16.3%) neonates it was due to apnea of prematurity which required

continuation of caffeine. The mean corrected gestational age of stopping caffeine was 32 weeks (SD: 1.09) even in those who did not have a recurrence of apnea of prematurity. So, there was no need to continue caffeine till 34 weeks of CGA for the remaining 88.1% of the neonates between 28 to ≤32 weeks gestation.Our study highlights the fact that among the 38.2% of babies who developed recurrence of apnea, only 11.9% developed apnea due to AOP and the need for restarting of caffeine citrate. Among others, secondary causes like late-onset sepsis (41.33%), anemia (13.33%), and NEC 12(16%) were the major contributors. Other causes included screening of ROP, hyponatremia, meningitis, and bronchiolitis. 4 newborns developed IH spell but was associated with anemia and after transfusion IH spell subsided. In a study published by Stark AR et al in 2017[16], sepsis (19.6%) and NEC (7.6%) were major contributing factors for recurrence of apnea. We compared the baseline and clinical characteristics among babies in whom AOP recurred and in whom AOP had not recurred after the first attempt of stopping caffeine. Gestational age less than 30 weeks (RR-3.39(1.78-6.46)), birth weight less than1250 grams (RR-7.64(3.05-19.16)), CGA on stopping caffeine less than 32 weeks (3.5(1.65-7.5)) and the need for respiratory support on day 7 (RR: 3.73(2.01-6.9)) had a significant association with the recurrence of apnea of prematurity (RR-Relative risk (CI-Confidence interval). (22.8%) neonates were <30 weeks in whom caffeine restarted for AOP.29 (23.6%) were less than 1250 gm in which caffeine was restarted for AOP. ANS coverage, SGA, and Gender had no significant association [Table 4].27(12.9%) neonates born through LSCS in which caffeine was restarted.18(27.3%) newborns in the AOP group required respiratory support till day 7. 23 (18.7%) neonates with completed ANS had AOP and only In a study done by Pergolizzi et al [2], the incidence of AOP was inversely related to gestation age between 28 to 30 weeks it was 54% and between 30 to 32 weeks it was 15%.96% of the mothers were exposed to antenatal steroids (complete or incomplete) among this 46% has complete ANS 49.9% has incomplete ANS this which was concordant with the findings in **Eichenwald E et al. [29,30].**

After multivariable logistic regression analysis, to adjust for the confounders, the independent predictor for the recurrence of AOP was birth weight less than 1250 grams. Birth weight <1250 grams had an increased odds of 6.23 as compared to no recurrence of AOP in babies. In a RCT study by Raj et al [14] early stopped caffeine group chances of recurrence of apnea was more with a Birth weight<1246grms.

CONCLUSION:

- Incidence of the recurrence of apnea in this study population was 38.2%. and incidence of recurrence of AOP was 11.9 % with CI (8.4-16.3%).
- <30 weeks GA has 20.6% of recurrence of AOP, and >30 weeks have 6.6% recurrence of AOP. Out of 34 recurrences of AOP, 29 (21.3%) were <1250 grams and 32(14.3%) were < 1500 grams.
- Median day of stopping caffeine was 7.69 with IQR (0).
- Among the secondary causes for the recurrence of AOP late-onset sepsis (LOS-41.33%) was the most important factor followed by NEC (16%) and anemia (13.33%).
- Median day of recurrence of apnea in the AOP group was 7 days while in secondary causes it was 2 days.
- The mean postnatal day for stopping caffeine in the AOP group was 8.79(SD-2.39) while the mean postnatal day of stopping caffeine was 7.53(SD-1.46) which was statically significant, indicating that those who require a greater number of days of caffeine chances of recurrence was more.
- Univariant analysis of Gestational age less than 30 weeks (3.39(1.78-6.46)), birth weight less than1250 grams (RR-7.64(3.05-19.16)), CGA on stopping caffeine less than 32 weeks (3.5(1.65-7.5)) and the need for respiratory support on day 7 (RR: 3.73(2.01-6.9).) had a significant association with the recurrence of apnea of prematurity (AOP).
- On multivariant analysis only birthweight<1250 grams was statically significant for AOP.
- From the results, we can predict that >30 weeks and > 1250 grams have less chance of recurrence of AOP and caffeine can be stopped after apnea free of 7 days this will reduce the hospital stay and also the cost of treatment.

LIMITATION:

(a)This is observational study the result would have been more significant if it was done as comparative study.

(B)Babies <28 weeks also at high risk of clinically significant apnea but they were not included in study. Further study can be planned to include this gestation age.

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P160. Airway Obstruction Owing to Intratracheal Calcifications an Uncommon Presentation Of Chondrodysplasia Punctata: A Case Report

Chandan S MD, Mukul Chauhan DNB, Nidhi Jain DM, Ashish Jain DM

Department of Neonatology, Maulana Azad Medical College, and Associated Lok Nayak Hospital

ABSTRACT:

Background: Chondrodysplasia Punctata (CDP) is a rare Congenital skeletal dysplasia (1 in 1 lakh live births) with many clinical variants. The radiological hallmark of the CDP is varying degrees of punctate stippling of the cartilages of the axial and appendicular skeletons. Punctate calcifications are found with x-ray examination in the epiphyses of long bones, nasal bone, trachea, larynx and vertebrae leading to malformations of the face and limbs.

Case Report: A 3.2 kg term male baby, presented to NICU on day 1 of life with respiratory distress with cyanotic episodes during breast feeding and crying. On examination baby had Binder's facies (shortened nose with depressed nasal bridge, flat facies, and a convex upper lip). On evaluation mother had no h/o warfarin, phenytoin, and alcohol abuse in the pregnancy with significant family history of binder facies in proband cousin. Anthropometric parameters were normal. On Xray examination baby had stippled epiphyses in the long bones, vertebral bodies and beading calcifications in larynx and trachea. CT Neck confirmed above findings with tracheal calcifications and narrowing. Fiberoptic laryngoscopy s/o tracheal narrowing. Tracheostomy could be done for symptomatic management however there is paucity of literature regarding definitive management.

Conclusion: CDP usually presents with short stature, short fingertips but intratracheal calcifications causing airway obstruction is rare in neonates and there is paucity of literature regarding management.

Key Words: Chondrodysplasia Punctata, Binders Facies.

P161

Free paper

Intensive care

Care Practices and Morbidity Profile of Extremely Low Birth Weight Neonates in a Tertiary Care NICU in Delhi

Authors: Dr Hemanth B1, Dr Sushma Nangia1, Dr Pratima Anand1

1 Lady Hardinge Medical College

Abstract

Introduction

Extremely Low Birth Weight neonates, defined as those weighing less than 1000 grams, are highly vulnerable to significant risks of morbidity and mortality, particularly in resource-limited settings. Improving outcomes for these neonates remains a major challenge in developing countries like India.

Aims and Objectives: The primary objective was to study magnitude and clinical profile of ELBW neonates admitted at a tertiary care hospital. Secondary objectives included estimating frequency of short-term outcomes and determining the average duration of hospital stay.

Materials and Methods: A prospective observational study was conducted from June 2023 to May 2024, enrolling 104 ELBW neonates admitted to the NICU. Data were collected on demographic characteristics, clinical care practices, and neonatal outcomes. Exclusion criteria were outborn babies admitted beyond 72 hours of life and those without guardian consent.

Results: The mean GA was 28.0 ± 2.7 weeks (24 to 31 weeks). The mean birth weight was 828.2 ± 126.4 grams (490 to 999 grams).

Maternal morbidities observed were hypertension in 32%, anemia in 33% and Diabetes mellitus in 12.4%. PPROM was observed in 41.2%.

Most common morbidity observed was RDS, affecting 76% of the neonates. Respiratory support was provided to 91.3% of the cohort by CPAP, with a mean duration of 13.6 days.

Other morbidities included PDA (23.1%), IVH grade ≥2 (13.2%), NEC ≥ Stage 2 (4.8%) and BPD (7.6%).

Early total enteral feeding resulted in neonates reaching full feeds in a mean time of 7.18 ± 1.83 days, compared to 9.88 ± 4.89 days for those on MEN.

The overall survival rate was 70%. Comparison with previous data from the center demonstrated a substantial reduction in mortality rates over time.

Conclusion: The observed decline in mortality corresponds with the adoption of improved clinical practices, including less invasive respiratory support, the increased use of Kangaroo Mother Care (KMC), and the implementation of early total enteral feeding.

P162

Abstract/Paper Category – Free Paper

Subspecialty n. Respiratory (RESP)

Title

'LALANA NEWBORN RESUSCITATION'

By

Dr. Grace Lalana Christopher

Place of study

Shifaa Hospital, Queens Road, Bangalore

Abstract

Introduction

'Lalana Newborn Resuscitation' (LNR) discovered for the first time in the world is the only safest and best non-invasive resuscitation technique in newly borns transiting from fetal fluid filled lungs to well aerated neonatal lungs by continuous distending pressure with sustained nasal oxygen inflation results in quick onset of rhythmic respiration.

Aims & Objective

First breath is important in establishing respiration for healthy outcome of newborn

Material & Methods

Grading of newborns I – V based on Pulse oximetry score from zero to +5, respiratory and heart rate. Implementation of Protocol I and Protocol II resuscitation in term and preterm <32 weeks gestation <1250g newborns with continuous distending pressure by sustained nasal oxygen inflation shifts fetal lung fluid causing uniform alveolar recruitment with large reduction in Pulmonary Vascular resistance (PVR) facilitating reflex vital cardio-vascular changes adapting to extra-uterine life is proven both scientifically and physiologically.

Results

The incidence of birth asphyxia was 21.4% among 1,383 singleton live births with178 asphyxiated new-borns in 830 deliveries attended. LNR method resulted in establishing rhythmic respiration within 1-3 minutes, of which 97.7% occurred within 1 minute and remaining 2.2%, within 2-3 minutes, with continuous monitoring by pulse oximetry till SpO2 >96%, with rhythmic respiration heart rate >100 beats per minute (bpm), all had uneventful neonatal period.

Conclusion

LNR is a scientifically based method with successful resuscitation of all 178 (21.4%) asphyxiated new-borns within 1-3 minutes of birth by sustained nasal oxygen inflation preventing hypoxia and asphyxia at birth in establishing quick onset of respiration.

P163

Utility of urine routine analysis to diagnose urinary tract infection in neonates - A prospective observational study

Authors: Indhumathi Subramani, Thangaraj Abiramalatha, Balakrishnan Rajaiah, Srinivas Ramakrishnan

Presenting author: Indhumathi Subramani

Category: Free Paper/Poster

Sub-category: Infectious diseases

Background

Urinalysis is the most frequently used test to identify potential urinary tract infection (UTI). The 2011 UTI guidelines from American Academy of Pediatrics suggests incorporation of a positive urinalysis into the definition of UTI. There is limited literature on the diagnostic accuracy of urine routine analysis to diagnose UTI in neonatal population.

Objective

To assess the diagnostic accuracy of urine routine analysis to diagnose urinary tract infection in neonates.

Methods

We included all neonates who underwent urine routine analysis and urine culture for suspected UTI. Urine collection was performed by fresh catheterization under sterile aseptic precautions. The index test was urine culture. The tests for evaluation were pus cells ≥ 10 per high power field and nitrite positivity. The results of the urine routine analysis (urine nitrite test, pus cells and bacteria) and urine culture, and other clinical and demographic details of the study neonates were collected prospectively in a pre-structured proforma.

Results

We had 169 neonates. 101 were term and 68 were preterm. Urine culture was positive in 71 neonates, while it was sterile in 98 neonates.

The point estimates and 95% confidence intervals for sensitivity, specificity, positive and negative predictive values, positive and negative likelihood ratios were 28.2% (18.1, 40.1), 89.8% (82, 95), 66.7% (47.2, 82.7), 63.3% (54.7, 71.3), 2.8 (1.4, 5.5) and 0.8 (0.7, 0.9) respectively for pus cells ≥ 10 per high power field. While the same values for nitrite positivity were 31% (20.2, 43.1), 78.6% (69.1, 86.2), 51.2% (35.5, 66.7), 61.1% (52, 69.7), 1.4 (0.9, 2.4) and 0.9 (0.7, 1.1) respectively.

Conclusion

Both pus cells and nitrite positivity had good specificity, but poor sensitivity to identify UTI in neonates.

P164.

Utility of urine routine analysis to diagnose urinary tract infection in neonates - A prospective observational study

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Presenting author: Indhumathi Subramani

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Conclusion

Both pus cells and nitrite positivity had good specificity, but poor sensitivity to identify UTI in neonates.

P165.

Title: Preterm Posterior Urethral Valve case series - Single Center Experience.

Pulapa Mounica, Rajarajan P, Prakash A, Umamaheswari B,Ramesh Babu, Sangeetha P.
Sri Ramachandra Medical College, Chennai.
Intensive Care (Neonatology)

Background : PUV can lead to pulmonary hypoplasia, cardiovascular defects, acute urinary retention and CKD.While primary ablation is an established treatment in term, diversion is generally preferred in preterms.

Aim : To evaluate outcomes of preterms with PUV.
Objectives : To analyse clinical risk ,outcomes of different treatment approaches and long term complications.

Methods : We conducted a retrospective review of neonates diagnosed with preterm PUV from 2013 to June 2024 at a level 3 NICU in SRMC Chennai. on antenatal sonographic risk factors as liquor and renal echogenicity classified as low ,intermediate and high risk. Those with low/ intermediate risk were managed with valve ablation while those with high risk managed with valve ablation & ureterostomy diversion by Paediatric Urology and all under follow-up.

Results : Among 29 male neonates (term,preterm) managed between 2013 - 2023 ,8 (27.5%) were preterms. Neonates were managed in NICU for respiratory care, dyselectrolytemia perioperatively with Nephrology intervention. Among the preterm PUV, low (1/8) and intermediate (5/8) cases were managed with primary valve ablation alone and all had normal RFT at 1-year follow-up.2 intermediate risk neonates had urinoma and both were stabilized with PCN followed by primary valve ablation. Both patients had normal creatinine at follow-up. Neonates with high risk (2/8) underwent diversion and both had high creatinine at 1year follow-up.

Conclusion : In those urinoma and low/intermediate risk, primary valve ablation after temporary drainage is effective. Poor risk features on ultrasound are important determinants of long-term renal outcomes.

P166.

COMPARISON OF MICROBIOLOGICAL QUALITY AMONG FACILITY BASED AND COMMUNITY BASED HUMAN MILK DONATIONS – A NON RANDOMIZED INTERVENTION TRIAL

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5HOD & Professor, Dept of Neonatology, Institute of Child health & Research Centre, Chennai.

Background

Inadequacies in hygienic procedures during milk expression, storage and transport may contribute to microbial contamination of DHM underscoring the importance of standardization in the above steps. HMB receives donations from both facility and community.

Aim

We aimed to compare the microbial contamination of both community (home-based) and facility donations after adoption of uniform standard aseptic procedures during milk expression, storage and transport.

Methodology

We undertook the study for a period of 8 months (January-August 2024) in CLMC at tertiary NICU. After screening, all donor mothers were educated to adopt uniform standard aseptic procedures during milk expression, storage and transport. DHM received from both facility and community were cultured for bacterial growth and colony counts with microorganism profile both before and after pasteurization.

Results

We analysed 315 raw DHM samples from facility and 315 samples from community donations. There was no difference in microbial contamination among facility(4.8%) and home-based(5.4%) donation (p-value=0.724). Post-pasteurization contamination was also not different between facility(6%) and community(9.1%), (p-value=0.176). Raw DHM showed significantly higher contamination with CONS in community collection than facility (60% vs 43.7%, p=0.0007) and

Klebsiella in facility donation (41.4%) than community(25%), p<0.001). Micrococci was significantly higher in community than facility donation (6.7%vs5.8%, p=0.0002). After pasteurisation community donation demonstrated higher bacterial spores than facility (40% vs 11.1%, p=0.012).

Conclusion

After adoption of uniform standard aseptic procedures during milk expression, storage and transport, community and facility-based donations were comparable in microbial contamination both before and after pasteurisation. Community donations seem to be safe as facility donation.

Keywords: Facility donations, Community donations, DHM, Microbial contamination, Pasteurization, Standard aseptic procedures

P167.

TITLE: INSIGHTS OF POSITIVE BLOOD CULTURES IN A TERITIARY CARE NICU

Dr TSV Vahnita, Dr Umamaheswari B, Dr Prakash A, Dr Saishree P

INTRODUCTION: Sepsis is the major cause of mortality and morbidity in NICU especially among premature neonates. Studies done have described a change in trend of microorganisms causing sepsis over past few years. We collected all the blood culture positive data to look in for microorganisms that grew in our NICU.

AIM OF THE STUDY: To describe microorganisms causing Blood stream infections among neonates admitted in NICU over 2years.

METHODS: This study is done at Sri Ramachandra institute of higher education and research. Neonates with positive blood culture were included in the study. Demographic data, risk factors for sepsis, blood culture results and bed occupancy details were collected from NICU Database and medical records and are recorded in an excel sheet.

RESULTS: A total of 80 Blood cultures were positive during the period of data collection. Median gestational age of neonates enrolled was 28weeks, IQR (27+2weeks to 33+4weeks). Median birthweight was 920gms, IQR (760gm-1800gm). Among 80 positive blood cultures, majority were due to klebsiella (26.8%), Enterobacter species (11.2%), Acinetobacter and Candida (8.7%). Among Blood cultures positive with candida species, common organism was candida auris. Other organisms were Staphylococcus species (6.25%), ECOLI (5%), Streptococcus species (3.75%), Sphingomonas (2.5%).

CONCLUSION: Regular audit of blood cultures are important in NICU. Understanding prevalence of microbes in the unit and their susceptibility pattern to antibiotics will guide us in selecting antibiotics for treatment.

P168

ABSTRACT SUBMISSION FOR FREE PAPER-SUBSPECIALTY CARDIOLOGY

TITLE: NIBP NOMOGRAM IN LATE PRETERM AND TERM NEONATES BASED ON POST CONCEPTIONAL AGE- RETROSPECTIVE OBSERVATIONAL STUDY

AUTHORS: Kruthi Jayanthi, Chandra Kumar Natarajan, Vaanathi Hemanatha Kumar, Abhishek Berwal, Mahendra Kasturi, Shalini K, Viswanath P B

INTRODUCTION: BP nomograms based on post conceptional age for late preterm / term well babies (34 weeks to 44 weeks) are limited . Many studies have shown post conceptional age as a strong factor for determining neonatal BP, but few studies have been done in an Indian setting. Hence we selected this variable in our study to determine percentiles.

AIMS AND OBJECTIVES: To develop non invasive BP nomogram in well term/late preterm babies based on post conceptional age.

MATERIALS AND METHODS: 2 year data of NIBP of late preterm and term neonates were collected. BP were recorded by oscillometric method ,minimum of 3 readings per day ,with an average of 3 days in a week for that particular gestational age. Total of 185 babies-1710 readings were obtained. Data was analysed and Linear regression analysis was performed to predict BP measurements based on the post conceptional age (34-44 weeks).

RESULTS AND CONCLUSIONS: Mean values of SBP, DBP, MAP for PMA-34-44 weeks were obtained. Univariate regression analysis was performed with PMA as independent variable, a positive correlation and statistically significant increase in SBP, DBP and MAP (SBP: $r=0.97$; $P<0.001$,DBF:$r=0.95$;$P<0.001$, MAP: $r=0.95$) with increase in gestational age was observed. Post conceptional age wise percentile charts (providing 10th,50th,90th,95th) have been developed which shall help in diagnosing and treating hypertension and hypotension.

P169.

TITLE: An Observational study to assess quality of neonatal blood culture practice.

AUTHORS: Shaik Naseeruddin1, Sridhar Santhanam1, Balaji Veeraraghavan2, Binesh Lal2, Debdip Mandal1, R Deepak Kishore1, Nandhini1, Manish Kumar1.

AFFILIATIONS:

1. Department of Neonatology, Christian Medical College, Vellore, 632004.
2. Department of Microbiology, Christian Medical College, Vellore, 632004.

BACKGROUND

Blood culture (BC) remains the cornerstone of sepsis management. Various factors in the clinical area and the lab may alter the accuracy of results, clinician's response and targeted antibiotic treatment, thus greatly affecting patient outcome. Quality parameters and benchmarks for cultures exist in adults, but are not defined in newborn. This study audited the procedure in our hospital and estimated if these indicators were valid in neonatal practice.

AIMS & OBJECTIVES

To assess the quality of procedures carried out during pre-analytical, analytical and post-analytical stages of blood culture sampling.

MATERIALS AND METHODS

A prospective observational study was conducted over a three-month period. All blood culture samples sent during the study period were analysed and various quality parameters were assessed viz, total number of cultures, culture positivity and contamination rates, needle to incubator time (NIT), volume of blood drawn, gram stain accuracy and turnaround time (TAT).

RESULTS

During the study period 719 cultures were done, 40% of which were in LBW babies. There were only four cultures which were true positive giving a positivity rate of 0.55%. In adults, a positivity rate of <5% may indicate overuse of blood cultures. Twenty-two samples grew contaminants (contamination rate -3.05%). Median (IQR) volume of blood drawn was 0.74ml (0.55-1.02) which was adequate. The mean (SD) NTI was 9 hours 45 minutes (4 hours 56 minutes) which was prolonged.

DISCUSSION & CONCLUSION

Most blood culture quality indicators like volume of blood, contamination rate etc were as per prescribed standards. The culture positivity rate was relatively low. Needle to incubation time and turnaround time, determined in our study were not up to prescribed standards. There is scope for improving blood culture practices which should lead to better antimicrobial stewardship.

P170

TITLE- "A Quality Improvement Project to increase the Resolution rate in the Corrective Maintenance of Neonatal electrical Equipment's in a tertiary care centre".

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Department of Neonatology, Institute of Obstetrics and Gynaecology, Madras Medical College.

Quality Improvement (QI)

Introduction-

Corrective maintenance of electrical equipment is the simple act of fixing "what is broken, inoperative, unproductive". Resolution rate is the proportion of service orders closed among the total equipments requiring corrective maintenance. Our's a Tertiary care referral unit with around 250 neonatal electrical equipment had a resolution rate of 34.2% within a week. This had led to interruption in the Neonatal care and facility.

Aims & Objective-

We aimed to increase the resolution rate of corrective maintenance per week from 35% to 85% over a period of 3 months (May–July 2024).

Materials & Methods-

The QI project was designed as per Point of Care Quality Improvement (POCQI) model and conducted over 6 months (April 01, 2024 to September 30, 2024). An Equipment Management Team (EMT) was formed and collected baseline resolution rate data for ventilators, CPAP machines, radiant warmers, multipara-monitors, syringe and infusion pumps. We excluded equipment which were not covered in the warranty and Annual maintenance. Process flow charts and fishbone diagrams were used to analyse the problems and to identify the key issues and change ideas were implemented in Plan-Do-Study-Act cycles.

Results-

Three PDSA cycles were implemented and run charts were constructed. With implementation of individual equipment log with ID, structured reporting protocol and equipment dash board with directory, the proportion of breakdown equipment receiving corrective maintenance increased to 95% from a baseline of 34.2% within a week and sustained above 85% over a period of 2 months.

Conclusion-

This QI Initiative using POCQI model resulted in a significant and sustained improvement in the resolution rate of corrective maintenance using locally available resources.

Keywords: Electrical equipment, Maintenance, Quality improvement initiative

P171.

A RETROSPECTIVE OBSERVATIONAL STUDY ON THE OUTCOME AND NUMBER OF SMALL FOR GESTATIONAL AGE AND INTRAUTERINE GROWTH RETARDATION BABIES IN OUR TERTIARY CARE CENTRE

AUTHORS

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INTRODUCTION

Studies show that babies born Small for Gestational Age (SGA) or with Intrauterine Growth Restriction (IUGR) are at increased risk for various complications, including hypoglycemia, respiratory distress syndrome (RDS), feeding difficulties, increased need for NICU care, and potential long-term developmental issues, particularly related to cognitive function, compared to babies born at an appropriate size for their gestational age (AGA); early detection and proper management during pregnancy and after birth are crucial to improve outcomes for these infants.

AIMS AND OBJECTIVES

To retrospectively analyse the number and outcome of Small for Gestational Age [SGA] and Intrauterine Growth Retardation [IUGR] babies in the past 6 months in our tertiary care centre to create awareness among mothers, community and health professionals in handling these high risk infants to provide special care and improve future outcomes.

MATERIALS AND METHODOLOGY

The study was a descriptive observational population based study on the newborn babies conducted in tertiary care centre retrospectively analysing the number of Small for Gestational Age and IUGR babies in our tertiary care centre in the past 6 months and their variable outcomes.

RESULTS AND CONCLUSION

A total of 1797 neonates were admitted in our newborn care unit in the past 6 months of which 11 % (193) were found to be IUGR. Among 193 babies 98 male and 95 female. 157 inborn and 36 outborn. Birth weight of 70 babies were less than 1 kg and 159 babies were between 1 to 1.5kg**.** Prematurity among IUGR contributed to about 85%. This high incidence of IUGR may be attributed to the tribal population of nearby hilly areas like Nilgiris, Anaikatti and high incidence of maternal PIH and invitro fertilization rates.

Focus on Antenatal nutrition, Primary care follow up, Early identification of PIH may have an impact in reducing IUGR rate.

REFERENCE

National library of medicine https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3177763/

IUGR small events, big consequences

P172.

CLINICAL OUTCOME OF SURFACTANT THERAPY IN A TERTIARY CARE HOSPITAL - A RETROSPECTIVE CROSS SECTIONAL STUDY

Dr Madhumitha. S, Dr Senthil Kumar , Dr Sathyan V K, Dr.Kumar Dr Sasikumar

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Introduction:

Early administration of surfactant to preterm babies with respiratory distress syndrome saves lives and decrease mortality and morbidities such as pulmonary air leak, chronic lung disease and mortality.

Aims and Objectives:

The aim of this study is to retrospectively analyze the clinical outcome of surfactant therapy administered in our new born care unit for a period of 6 months.

Materials and Methods:

Ours is a retrospective analytical study carried out over a period of 6 months in Neonatal Intensive Care Unit of Coimbatore Medical College and Hospital. Clinical outcome measured in terms of discharge, complications such as pneumonia, apnea, Intra ventricular hemorrhage.

Results:

Of Babies delivered, 158 babies required surfactant. Of these 35(22.4%) were died, 122(78.2%) were discharged. Of this, 14(8.9%) developed pneumonia, 36(23%) developed sepsis, IVH 3(1.9%), Pneumothorax 2(1.2%).

96 (61.5%) required one dose, 43(27.5%)required 2 doses, 17(10.89%) required 3 doses. 3 Term babies required surfactant. 4 Meconium aspiration Syndrome babies required surfactant.

Conclusion:

As preterm babies born outside of tertiary care centres will benefit from early administration of surfactant, every peripheral hospital performing deliveries should develop a plan in association with physicians in referral hospitals to provide this potentially life saving therapy.

P173.

ATYPICAL OSTEOMYELITIS OF NEONATE – A rare case report

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CASE REPORT :

A 33 weeks moderate preterm /AGA /DCDA Twin 1 , male baby delivered by Emergency LSCS (oligohydramnios),birth weight -2.3kg, cried after birth ,admitted in NICU for preterm care .At 72 hours of life baby showed clinical features of sepsis after doing sepsis screen started on first line IV antibiotics.On DOL -5 , baby developed 2 localized swellings with erythema in the body and lower end of sternum.

USG :ill defined hyper echoic collection suggestive of abscess.MRI :overlapping, focal lytic lesion with hyper intense signal involving second and third sternebrae,suggestive of OSTEOMYELITIS of sternum

.I & D done frank pus was aspirated, sent for culture and sensitivity,initially started on empirical antibiotic.Culture sensitivity: MRSA,Sensitive to meropenem ,vancomycin, antibiotics upgraded.

DISCUSSION:

Osteomyelitis is a rare disease in newborn,resulting from hematogenous seeding in the setting of bacteremia or direct extension from skin source of infection.Most common organisms ae staphylococcus aureus, group B streptococcus ,Neisseria gonorrhoeae

common sites: femur,humerus,radius,tibia ,maxilla.

This baby had atypical presentation involving sternum clinically diagnosed by local swelling with erythema and decreased movement of affected part, confirmed by MRI -features of osteomyelitis, aspiration of pus -MRSA treated with IV antibiotics for 4 weeks.

Osteomyelitis if identified early and specific treatment started at earliest would prevent serious complications like significant disability from joint or growth plate damage.

P174.

ABSTRACT

POSTER ONLY

DISORDER OF SEXUAL DEVELOPMENT- DENYS DRASH SYNDROME

Dr. Smith.R

HEAD OF THE DEPARTMENT- *Dr. Sasikumar*

CHIEF SNCU CMCH- *Dr. Kumar*

ASSISTANT PROFESSOR- *Dr. P. Senthil Kumar, Dr. V. K. Sathyan*

NEONATAL INTENSIVE CARE UNIT, CMCH, COIMBATORE.

INTRODUCTION

Denys Drash syndrome is an autosomal dominant disorder of sexual development as a result of mutations in WT1 gene on chromosome band 11p13. It presents with ambiguous genitalia [mostly XY], Bilateral Wilms tumour, Focal or diffuse glomerulosclerosis and End stage renal disease occurs by age 3. Baby presents with early onset nephrotic syndrome within 1 year of age and progressive renal insufficiency.

CASE REPORT

At birth the baby was small for gestational age and had respiratory distress which settled with oxygen. On further evaluation baby had atypical genitalia and other system examination was normal. Baby was born to a primi with no history of maternal drug exposure, Congenital adrenal hyperplasia, Placental insufficiency, prenatal abnormalities or genetic syndromes in family members. Examination of genitalia revealed micropenis, poorly developed scrotum, both testis non palpable in inguino scrotal region and anogenital ratio of 0.4. Investigations showing normal levels of 17 hydroxy progesterone, baseline electrolytes, complete blood counts and renal function test. USG abdomen and pelvis showing unvisualised uterus and ovaries, ovoid shaped testis like structures seen medial to external iliac vessels suggestive of bilateral undescended testis, adrenals and kidneys were normal. Karyotyping revealed 46XY [male]. Whole exome sequencing done using FISH technique provided a diagnosis of DENYS DRASH SYNDROME of WT1 gene Further Plan and follow up includes periodic examination of the baby, serial ultrasonogram to monitor for the renal status and risk of Wilms tumour , Anti mullerian hormone, testosterone and dihydrotestosterone levels. Diagnostic laparoscopy is planned at 1year of of age under Paediatric surgery.

P175.

CASE SERIES – COLLODION BABY IN COIMBATORE MEDICAL COLLEGE HOSPITAL.

Authors : Dr.S.Vasanthapriya nachiar, Dr.P.Senthil Kumar, Dr. V.K.Sathyan, Dr.Kumar.

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INTRODUCTION:

Ichthyoses are disorders of keratinization/ Cornitication in which abnormal differentiation, desquamation of epidermis, result in defective cutaneous barrier. Some of these conditions cause disfigurement and psychosocial trauma, so early diagnosis, probable course, supportive management of patients, parents and caregivers improves outcome.

AIM AND OBJECTIVES:

The Aim of this study is to overcome the challenges, improve the outcome of collodion baby.

MATERIALS AND METHODS:

Ours is a descriptive, Observational study of collodion babies over a period of 1 year in Coimbatore Medical College Hospital.Their clinical presentation, outcome were assersed during 1 year period.

RESULTS:

In the past 1 year, of the 4 collodion baby, 1 Inborn, 3 outborn, 1 baby developed sepsis and expired, remaining gained weight, discharged successfully . 3 Babies received isotretinoin.

CONCLUSION:

With strict asepsis, Skin care, humidification, vigorous feeding, isotretinoin, the outcome of collodion babies improved.

P176.

TOPIC - STUDY OF ANTENATALLY DETECTED CONGENITAL ANOMALIES OF FETUS IN TERTIARY CARE CENTRE HOSPITAL - RETROSPECTIVE ANALYTICAL STUDY

AUTHORS: Dr Dhiya P Reji, Dr B R Sasikumar,Dr N Kumar, Dr. P Senthilkumar, Dr VK Sathyan

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INTRODUCTION

Congenital anomalies are structural or functional anomalies that arise during intrauterine life.Those are major cause of perinatal morbidity , mortality and long term disability.

AIM :

To study the occurrence of antenatally detected Congenital anomalies in a tertiary care medical college hospital over a period of three months.

MATERIAL AND METHODS:

This is a retrospective analytical hospital based study of antenatal mother's with fetus with some Congenital anomalies who attended our out patient department over the past 3 months to find out the occurrence of antenatally detected Congenital anomalies.

RESULTS

Total 190 antenatal mother's with some fetal anomalies were included in our study , results were found to be , in cardiovascular system-33 had intracardiac echogenic foci, prominent left SVC in 4,VSD in 4, TGA in 3, Aberrant subclavian artery 2, TAPVC 1, Left hypoplastic left heart syndrome 1 , coarctation of aorta 1,dilated coronary sinus 1, fetal pericardial effusion 1.Central Nervous system- 32 choroid plexus cyst, 11 had prominent lateral ventricle of brain,Arnold Chiari malformation 4, corpus callosal agenesis in 3,lumbar meningomyelocele 1,Congenital anomalies of kidney and urinary tract - renal pelviactasis 32,hydroureteronephrosis in 7, multicystic dysplastic kidney in 3, horse shoe kidney in 2, ectopic kidney 1, bilateral renal agenesis 1 ,Unossified nasal bone 6 , hypoplasia nasal bone 3, absent nasal bone in 2,10 had single umbilical artery ,club foot in 3,Congenital diaphragmatic hernia 2, hemivertebra in 2, one each of cystic hygroma, CPAM ,cleft palate /upper limb, fetal cholelithiasis.

CONCLUSION:

With universal screening by antenatal ultrasound, a large number of Congenital anomalies were detected and this internship will help to develop strategies for patient counselling and management.

P177.

A RETROSPECTIVE OBSERVATIONAL STUDY ON PERFORMANCE AND EFFICACY OF COMPREHENSIVE LACTATION MANAGEMENT CENTRE(CLMC) IN COIMBATORE MEDICAL COLLEGE HOSPITAL

AUTHORS

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INTRODUCTION :

A Comprehensive Lactation Management Centre (CLMC) is a facility that collects, stores, processes, and distributes donor human milk (DHM) to babies in public health facilities, also provide lactation support to mothers. They are established at tertiary public health facilities, such as medical colleges and district hospitals.

AIMS AND OBJECTIVES

To retrospectively analyze the performance of human milk bank in terms of safety, quality, awareness ,promotion and sustainability in a tertiary care centre and to know the culture sensitivity pattern of DHM ,incidence of culture positivity pre and post pasteurization and to calculate the beneficiaries of DHM.

MATERIAL AND METHODS

The study was a descriptive observational population based study conducted in tertiary care centre retrospectively analyzing the Quantity, Quality, Sustainability.of CLMC , its performances- to calculate total number, percentage of beneficiaries of CLMC for 2 years.

RESULTS:

In Past 2 years,

No.of donors: 7557

No.of beneficiaries: 15967

No.of culture positivity: 41

common reasons to discard milk -≥105 colony-forming units/mL of Gram-negative bacilli contamination (80%) , Gram Positive Cocci in Pairs (20%)

Indications for donar milk:

prematurity (39.2%),
maternal illness (20%)
post-surgery (5%).

CONCLUSION

Proper management and operation of a human milk bank can support breastfeeding, and provide a safe alternative to artificial formula for feeding preterm or ill infants thereby preventing the complications. Sustainability of the milk bank needs more propagation and financial support by health authorities.

P178.

TOPIC:

Clinical profile of neonates with brachial plexus injury in a tertiary care hospital centre- an observational study

AUTHORS:

Dr Janani A G, Dr Kumar N,Dr Senthilkumar P,Dr Sathyan V K

PLACE OF STUDY :

Neonatal Intensive Care Unit, Department of Pediatrics, Coimbatore medical College Hospital

INTRODUCTION:

Brachial plexus injury leads to long term complications & disability.Early identification & appropriate management decreases it

AIM:

To study the clinical profile of neonates with brachial plexus injury and its outcome in a tertiary care hospital over a period of 6 months

MATERIAL AND METHODS:

This is a observational study of neonates with BPI in our NICU carried out over a period of 6 months .Both preterm & term,outborn & inborn newborns were included .Details regarding maternal diabetes,mode of delivery, instrumental deliveries,birth weight of the babies were documented.Physiotherapy had been initiated at the earliest & further followed up for the 6 months of age.Clinical outcome was documented and analysed

OBSERVATION & RESULTS:

Totally 10 babies were identified to have BPI .Among the 10, 3 babies are having antenatal risk factors such as maternal diabetes (2)and macrosomia (1).Four is having intrapartum risk factors- instrumental forceps delivery(2) & shoulder dystocia (2)

Associated injury: 1 baby had right clavicular fracture& another with ipsilateral diaphragmatic paralysis

Injury severity: Severe - 6 babies ;mild - moderate injury-4

Physiotherapy was initiated at the earliest, after 5-7 days of injury & it was delayed for 3 weeks in case of fracture .

During the 6 months of follow up,4 attained complete recovery 6 shows partial recovery & 1 required MRI & surgery-.Nerve reconstruction

CONCLUSION:

From the study ,major causes of injury involves the intrapartum risk factors

Recovery rate at the end of 6 months is 40%

P179.

ABSTRACT

TITLE: "Clinical Variability and Neurodevelopmental Outcomes in Neonates with Multisystem Inflammatory Syndrome: An Observational Study"

Background:

Multisystem Inflammatory Syndrome in neonates arises after exposure to SARS-CoV2 during the perinatal or neonatal period. Due to the lack of definitive diagnostic criteria and varied clinical manifestations, diagnosing MIS-N is challenging and requires heightened clinical suspicion.

Objectives:

To analyze clinical presentations, laboratory parameters, and treatment of MIS-N in neonates exposed to SARS-CoV2, with follow-up neuro developmental assessment after 6 months**.**

Methods:

In this study, neonates meeting the MIS-N diagnostic criteria from Pawar et al. were admitted to a tertiary healthcare center from 2022 to 2024.

Demographics: Birth weight, Gestational age, along with maternal history, serology, clinical features and laboratory results, management and outcomes were studied. Continuous variables were expressed as mean ± SD or median (IQR). Categorical variables were expressed as proportions.

Results:

42 neonates with MIS-N were treated; respiratory issues were most common (66.6%). Treatment included invasive ventilation (35.7%) and non-invasive support. Cardiovascular (38%) and neurological (21%) manifestations were also observed, GI (9.5%), fever (11%). All had positive serology in the form of high titres of SARS CoV2 IgG antibodies and elevated inflammatory markers serum ferritin (178.96ng/ml), LDH (443.1 U/L) , D –dimer (1132 ng/ml). Most babies received steroids (63%) as immunomodulatory therapy. All babies were discharged with follow-up.

Conclusion:

MIS-N in neonates, especially those exposed to maternal COVID-19, poses significant risks for neurodevelopmental impairments. Early diagnosis and management of inflammation are crucial for improving outcomes, as higher inflammatory markers correlate with increased developmental challenges. Enhanced vigilance and appropriate investigations can lead to better long-term results for affected infants.

P180.

ABSTRACT

TITLE: CONGENITAL HEART BLOCK IN A NEWBORN ASSOCIATED WITH MATERNAL SLE

AUTHORS: Dr. Divya sri L, second year post graduate, GGH, Srikakulam

Dr. Chowdhary babu, Professor and HOD, Srikakulam

INTRODUCTION: congenital heart block is an uncommon life threatening condition in newborn and is the most common outcome of pregnancies related to SLE. Incidence is 2 in 100 live births exposed to maternal antibodies.

CASE PRESENTATION: A 1 day old male neonate born in a local private hospital was referred because of fetal bradycardia born to primi mother of 27 years of age who tested positive for systemic lupus erythematous at 33 weeks of gestation

BIRTH HISTORY: Baby was born out of non consanguineous marriage to a primi mother with marital life of 2 years at 35 weeks of gestational age delivered via LSCS in a local private hospital, Srikakulam. Weight- 2.3 kg, cried immediately after birth, APGAR at 1st and 5th minute- 8 and 9 respectively and was referred to our hospital.

ON EXAMINATION: cry/tone – good, activity- good, pink in colour

Vitals- temperature- 36.6 C, HR-78/min, RR-52/min, peripheries- warm , spo2- 94 % at room air, GRBS- 89mg/dl

CVS- S1 S2 heard, no murmur, ECG showing- 2:1 AV block

CLINICAL COURSE AND OUTCOME:

INVESTIGATIONS: Fetal ECHO at 33 weeks of gestation showed an atrial rate of 153 bpm, ventricular rate of 81 bpm. All blood investigations are normal. 2D ECHO showing structurally normal heart with small PFO, intact IVS, mild biventricular hypertrophy with good biventricular function. No COA. ANA profile of the mother showed specific bands for SSA/RO 60 KD, SSA/RO 53 KD, SSB antibodies. ECG showing 2:1 AV block

TREATMENT: Symptomatic management done. Cardiologist opinion was taken and was decided to insert pacemaker and case was referred to higher centre for pacemaker

CONCLUSION: Regular antenatal checkups and assessment of SLE mothers with fetal ECHO early in the pregnancy can help with ongoing conduction defects and fetal discomforts. Management comprises organised and timely monitoring for heart block with steroids transplacentally

P181.

Title : Big Troubles, Tiny Clues: Cracking the Code of Neonatal Sepsis with Blood Biomarker Puzzles

Authors : Varun Muddasani1 , Harish S1, Santosh Kumar Kamalakannan1, Asha Arun1, KumuthaJ1

1. Department of Neonatology, Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS) Saveetha University, Chennai, IND

Introduction:

Sepsis is a major cause of neonatal mortality, with Early-Onset Sepsis (EOS) and Late-Onset Sepsis (LOS) posing distinct diagnostic challenges. Biomarkers such as Platelet Lymphocyte Ratio (PLR), Neutrophil Lymphocyte Ratio (NLR), derived Neutrophil Lymphocyte Ratio (dNLR), Neutrophil Lymphocyte Platelet Ratio (NLPR), C-Reactive Protein (CRP), and the Systemic Immune-Inflammation Index (SIII) offer potential for diagnosis. This study compares these biomarkers for predicting EOS and LOS outcomes.

Aims & Objectives:

To evaluate the diagnostic accuracy of hematological and inflammatory markers in predicting EOS and LOS outcomes in neonates using Receiver Operating Characteristic (ROC) analysis.

Material & Methods:

This retrospective cohort study analyzed 147 neonates diagnosed with sepsis, divided into EOS and LOS groups. The biomarkers assessed included PLR, NLR, dNLR, NLPR, CRP, and SIII. ROC curves were used to evaluate the diagnostic performance of each biomarker, calculating Area Under the Curve (AUC), sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and diagnostic accuracy (DA).

Results:

For EOS, biomarkers demonstrated low predictive power, with CRP showing the highest AUC (0.539). For LOS, NLR (AUC = 0.868), dNLR (AUC = 0.849), and NLPR (AUC = 0.864) showed excellent sensitivity and moderate specificity. PLR and SIII had limited utility due to low specificity.

Conclusions:

NLR, dNLR, and NLPR are effective for LOS prediction with high sensitivity, while all markers show limited utility in EOS. Further research is needed to improve diagnostic tools for EOS.

P182.

NNF 2024 presentations

1.Oral

Title: Nutritional status and Growth trajectories of bronchopulmonary dysplasia neonates of less than 32 weeks gestation: A single centre experience over 4 years

Authors – Chaitra GB, Tanushree Sahoo, Tapas Som, Pankaj Kumar Mohanty, Jagdish Prasad Sahoo

Department of Neonatology, All India Institute of Medical Sciences, Bhubaneswar, India.

Introduction: We all know BPD affects postnatal growth and there are no guidelines on nutritional advice for established BPD cases who require higher caloric requirement.

Objectives:(1) To evaluate the postnatal growth status of established BPD cases at 6 weeks, 3months and 6 months (2) To assess risk factors, severity and outcome of BPD.

Methods: We did a retrospective observational study of preterm neonates of <32 weeks gestation born during Jan 2020 to Dec 2023. Demographic details, risk factors, diagnosis and outcomes, follow up anthropometric parameters were collected at discharge, 6weeks, 3 and 6 months respectively. Growth parameters (weight, height, weight for length, head circumference) were converted to Z scores by comparing with standard WHO growth charts.

Results: Out of 312 live born preterm neonates of < 32 weeks, 19.8% (62/312) died before 28 days and 14% (44/264) were diagnosed to have BPD. Grade 1,2 & 3 BPD were seen in (50%, 22), (38.6%,17) (11.4%, 5) respectively. 11%, 5 cases died before discharge. (6.8%) 3 cases died postnatally due to severe pneumonia. Mean gestational age at birth was 29 weeks. At birth more than 1/3rd was SFD (34%; 15). Comorbidities noted were EONS (34%), feed intolerance (45%), PDA (27%) and anaemia (72%) and MBD (54%). Follow up growth status mean z scores showed weight -moderately undernourished (-2 to -3) at 6weeks and 3 months. Linear length at discharge and 6 weeks showed moderate stunting (-2 to -3) and mild stunting at 3 and 6 months. Weight for length (-1 to -2) at 6 weeks and 3 months suggestive of mild wasting. HC at (-1 to -2).

Conclusion: Established BPD cases demand higher energy requirement. Adequate nutrition is important for postnatal growth. Follow up nutritional status -weight, length and weight/length were more severely affected compared to head circumference particularly at 6 weeks and 3 months.

Key words: BPD-Bronchopulmonary dysplasia, Postnatal growth

P183.

TITLE: “CONGENITAL ADRENAL HYPERPLASIA"

AUTHORS: DR.RAKSHANA.K , 2nd year MD PAEDIATRICS.

DR.RAMANATHAN , HOD AND CHIEF OF NEWBORN UNIT.

DR.RAJASELVAN , ASSISTANT PROFESSOR OF NEWBORN UNIT.

PLACE OF STUDY : GOVERNMENT CUDDALORE MEDICAL COLLEGE AND HOSPITAL, CHIDAMBARAM.

BACKGROUND: Many neonates present with shock during the neonatal period, often due to sepsis, cardiogenic, or hypovolemic causes. This report highlights a neonate who presented with shock since birth due to adrenal insufficiency.

CASE DETAILS: A term male neonate, born via normal vaginal delivery with a birth weight of 2.830 kg, was admitted for respiratory distress. He required mechanical ventilation and exhibited poor peripheral perfusion. Despite intravenous fluid boluses and inotropes, shock persisted. Laboratory findings revealed hypoglycemia, hyponatremia, hyperkalemia, and hyperpigmentation. The mother's obstetric history included three pregnancies (Para3 Live2 Abortion1 Death1), with the second child diagnosed with congenital adrenal hyperplasia . Amniocentesis indicated a CYP21A2 mutation (21-alpha hydroxylase deficiency), and the infant showed features of congenital adrenal hyperplasia. After treatment with hydrocortisone and oral fludrocortisone, the neonate's shock and hypoglycemia improved.

DISCUSSION: Congenital adrenal hyperplasia is an autosomal recessive disorder affecting cortisol biosynthesis, leading to adrenocortical hyperplasia and the overproduction of intermediate metabolites. Clinical manifestations vary depending on the specific enzymatic deficiency.

CONCLUSION : Congenital adrenal hyperplasia is a prevalent autosomal recessive disorder that can present at various life stages. Early diagnosis of salt-wasting type is crucial for neonatal survival. Treatment should be tailored to alleviate symptoms and promote normal sexual development, fertility, height, and overall quality of life.

P184.

Title: CASE REPORT OF NEONATAL GRAVES DISEASE - PPHN MIMIC

ABSTRACT :

Dr. Dhanusuya G, Dr. Umamaheswari, Dr. Prakash

INTRODUCTION:

Hyperthyroidism is by itself uncommon in the newborn period, and it's association with pulmonary hypertension is very rare. The prevalence of Graves' disease among pregnant women has been estimated to be 0.1 to 0.4%, and only 0.6 to 9.6% of infants born to these women develop hyperthyroidism.

CASE REPORT :

We report a case of neonatal Graves' disease of a neonate with persistent pulmonary hypertension (PPHN) that required prolonged oxygen support. The exact mechanisms responsible for this effect on pulmonary vascular pressure are not well understood. Recent studies have provided some evidence that thyrotoxicosis has direct and indirect effects on pulmonary vascular maturation, oxygen economy, vascular smooth muscle reactivity, surfactant production,and metabolism of endogenous pulmonary vasodilators, all of which may contribute to the pathophysiologic development of PPHN. Our baby had Meconium stained liquor and had features of PPHN which was initially attributed to MAS but settled only after treatment with anti thyroid drugs.

CONCLUSION:

PPHN is a significant clinical entity among term newborns especially with Meconium stained liquor , Asphyxia and many other conditions and the symptoms of hyperthyroidism may be confused initially with those of PPHN, we would like conclude that it could be considered a mimic for PPHN .

P185.

TITLE: CAUDAL REGRESSION SYNDROME

AUTHORS: DR.RAMANATHAN,HOD, DEPARTMENT OF PAEDIATRICS

DR.RAJASELVAN, ASSISTANT PROFESSOR OF PAEDIATRICS.

PLACE OF STUDY : Government cuddalore medical College and hospital.

BACKGROUND: In a neonate with bilateral foot deformity , we present a preterm baby with caudal regression syndrome.

CASE DETAILS: Moderate preterm 33w+6days,1.39kg,infant of diabetic mother,dichorionic diamniotic twin 2,admitted with complaints of congenital foot deformity, on examination dysplastic Deformity of bilateral lowerlimb with only 2 toes, spine and external genitalia normal ,urine and meconium passed.xray of bilateral lowerlimb shows femur hypoplasia ,hypoplastic tibia with fibula hemimelia with absent foot.obtained orthopedician opinion. Echocardiography done which shows Atrial septal defect 0.6centimeter,dilated right atrium and right ventricle.ultrasonography abdomen shows normal.other investigations are normal .paediatric surgery opinion obtained – nil intervention at present, rehabilitation measures can be offered once the baby turns 3 to 4 years of age.

DISCUSSION: Caudal regression syndrome is a rare genetic disorder that can occur sporadically with an incidence of 1 in 1,00,000 people.The treatment for this syndrome is multidisciplinary approach as the child presenting with above mentioned features and findings.

P186.

ABSTRACT

TITLE – TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) IN NEONATAL BRACHIAL PLEXUS PALSY: A CASE SERIES

Introduction

Neonatal Brachial Plexus Palsy (NBPP) affects 1 to 4 per 1,000 live births, causing arm weakness due to nerve stretching during delivery. While many infants recover, 20%-30% face persistent upper limb deficits, often requiring primary nerve surgery for those not showing recovery in biceps and shoulder function. Transcutaneous Electrical Nerve Stimulation (TENS) is a technique delivering electrical currents to improve muscle strength and range of motion, but its effectiveness in infants with NBPP is under-researched.

Aims and Objectives

This case series aims to evaluate the effectiveness of TENS therapy in enhancing arm mobility and function in infants diagnosed with Birth Brachial Plexus Injury (BBPI) and to assess its safety and efficacy.

Materials and Methods

Four infants with BBPI received TENS therapy following initial stabilization. Regular outpatient physiotherapy sessions were also conducted to monitor progress.

Results

Significant improvements in arm mobility and function were observed in all four infants by discharge, suggesting a positive impact of TENS on motor recovery.

Conclusions

While the results are promising, the use of TENS for NBPP remains debated due to limited studies on its safety and efficacy. This case series highlights a potentially novel approach to managing BBPI and emphasizes the need for further research to validate these preliminary findings and comprehensively evaluate TENS as a treatment modality for this vulnerable population.

P187.

PERSISTENT HYPOGLYCEMIA IN THE NEWBORN

Dr Abhipsha Anuranjana, Dr Manish Kumar, Dr Benjamin Ross, Dr Mintoo Tergestina, Dr Sridhar Santhanam, Christian Medical College Vellore

Introduction

Hypoglycemia in newborn period can present with short term morbidity like seizures or apnoea, and impact neurodevelopment. Persistent hypoglycemia, (Glucose infusion requirement >12mg/kg/min) is more likely to cause complications and may be secondary to metabolic problems.

Aim and Objective

Objective of this retrospective study was to outline the risk factors, clinical course, short and long-term outcomes of newborns with persistent hypoglycemia over a 5-year period (2019-2023).

Materials and Method

Newborns with persistent hypoglycemia were identified from the electronic database. Clinical and demographic profile of these patients were recorded and analyzed for the study objectives.

Results

61,430 newborns were born in the hospital over the 5-year period. A total of 65 newborns (50 inborn) had persistent hypoglycemia, with an incidence of 0.81/1000 live births. Twenty-eight babies (43%) were small for gestational age, 14(21.5%) were very low birth weight, 15(23%) were infants of diabetic mothers, 10(15%) had sepsis and 9(14%) had perinatal asphyxia. Critical samples were sent for 55 newborns. Hyperinsulinism was noted in 45(69%) newborns and hypocortisolism in 58%. Most common hyperglycemic agent used was hydrocortisone (32%), followed by hydrocortisone and diazoxide (23%). There were 3 deaths in the cohort and 7 babies were discharged against medical advice, while 84% were alive. Five babies (7.5%) had associated syndromes. Eleven of 43 babies (17%) who had follow up had developmental delay.

Conclusion

Persistent hypoglycemia complicates many neonatal conditions. A majority of babies with persistent hypoglycemia had hyperinsulinism. More than a third of babies had an adverse outcome (death or disability).

P188.

ABSTRACT

TITLE: CEREBRAL SINOVENOUS THROMBOSIS IN A TERM NEONATE.

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INTRODUCTION: Cerebral SinoVenous Thrombosis(CSVT) is a rare, potentially devastating disorder, associated with acute and long-term neurologic sequelae in neonates. The incidence of CSVT is 1-12 per 1 lakh newborns per year.

CASE PRESENTATION: A 4-day old male neonate was brought with complaints of generalized tonic-clonic seizures involving all 4 limbs- multiple episodes lasting for a few minutes.
Birth history: Non-consanguineous marriage, Marital life - 1 year, Primigravida, 39 weeks of gestational age, delivered via NVD@ private hospital, Weight: 3.5 kg, cried immediately after birth, APGAR- Unknown. H/O inadequate feeds and decreased activity.
On Examination: cry- weak, decreased activity, pinkish color, Vitals: Temp 36.6 C, PR-170/min, RR-65/min, Peripheries: warm, Spo2: 92 %@RA, GRBS-78 mg/dl.
CNS: Tone increased in all limbs.

CLINICAL COURSE AND OUTCOMES:
INVESTIGATIONS: Hb: 22.6 g/dl, PCV: 70%, Na: 163 MEq/dl, Blood urea: 112, TSB: 16 mg/dl, CRP<0.5, PT: 43.7, INR 3.64, CSF protein- 263mg/dl.
MRI: Deep vein thrombosis in B/L medullar vein, internal cerebral vein, straight sinus,
diffuse cerebral white matter edema S/o CSVT.
TREATMENT: Baby was treated for hypernatremia and polycythemia and with anti-epileptics and LMWH(6 weeks), started improving clinically.

CONCLUSION: Recognition of polycythemia immediately after birth, proper advice, initiation of breastfeeding, and maintenance of fluids at phototherapy can prevent dehydration, and disastrous outcomes.

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Is Extensive Drug Resistance (XDR), the new norm? How can we tie the bell?

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Introduction

Neonatal sepsis is defined as systemic symptoms, signs associated with culture positivity in the first 28 days of life. It can further be classified as EONS – occurring in first 72 hours of life and LONS – occurring after 72 hours of life. Classically, the organism profile, disease burden and case fatality rate were different in EONS and LONS, with EONS thought to be transmitted in-utero or during birthing processes. Recently, ample evidence from literature shows the organism profile of EONS and LONS in Indian settings are similar with similar resistance pattern. Moreover, the mode of transmission of sepsis, presenting within 72 hours could also be predominantly linked to birthing processes and immediate newborn care in Indian settings.

Neonatal sepsis is the most common direct cause of neonatal deaths in India. The incidence of neonatal sepsis in NICU settings – both government and private remains unacceptably high in Indian settings, with studies showing incidence of about 8-10% in NICU admissions. With incidence remaining un-acceptably high, treatment costs, morbidity, duration of hospital stay and case fatality rates become important to build a healthy and productive NICU graduates.

First antibiotic – Penicillin was discovered by Alexander Fleming in 1928 and soon after resistance to aminoglycosides and penicillin by penicillinases was discovered in next 10 years. There is a steady increase in spectrum of bacterial resistance, mechanism of acquiring bacterial resistance and virulence of bacterial infection in last few decades. In the current scenario, infections are caused by multi-drug resistance organisms primarily in 30-50% sepsis episodes. Also, there is a significant rise in extensive drug resistance (XDR) – susceptibility to only 1-2 antibiotics/ antibiotic groups. With this background, the next 10-20 years will witness steady increase XDR and TDR (Total drug resistance).

Sepsis in ICU setting could be viewed as iatrogenic complication, coupled with high morbidity, mortality, treatment costs. This could make neonatology practice very challenging in coming years.

Materials and methods

We conducted an ambi-spective descriptive case control study of sepsis in our unit – tertiary care referral unit in the last 3 years. This study aims to understand the evolution of sepsis, characterize the organism, resistance profile of organisms, to study the burden of morbidity, mortality, and taking controls from the same unit.

Cases were defined as neonates with systemic signs and symptoms of sepsis along with culture positivity (blood/ CSF/ BAL/ wound swab). Controls were defined as neonates admitted to NICU during the study period without a diagnosis of sepsis. Sensitivity was studied for – penicillin group (Piptaz, Amoxiclav), Cephalosporins (ceftriaxone, cefotaxime, cefoperazone, ceftizoxime, cefuroxime, cefepime), Carbapenem (Meropenem, Imipenem, Dorepenem, Ertapenem), Monobactam (Aztreonam), Fluroquinolones (Ciprofloxacin, levofloxacin), Aminoglycosides (Amikacin, Gentamycin), Cotrimoxazole. In case of resistance to these drugs, Tigecycline, Colistin, chloramphenicol and tetracycline sensitivity was tested.

Multi-drug resistance (MDR) was defined when ≥3 of these antibiotic group was resistant. Extensive drug resistance (XDR) was defined when the organism was susceptible only to 1-2 of first- or second-line antibiotic/ antibiotic groups. Total drug resistance (TDR) was defined when the organism was not susceptible to any antibiotic drug tested.

Primary objective was to study the sepsis burden, case fatality rate, bacteriological profile and anti-microbial resistance. Secondary objective was to study the burden of sepsis – compare the incidence of morbidities – BPD, ROP, mortalities and duration of hospital stay between cases and controls. To study the difference in burden between the organisms – Klebsiella pneumonia vs other gram-negative bacilli (GNB) vs Elizabethkingia meningoseptica vs gram positive cocci (GPC).

Results

A total of 3836 babies were born during the study period, with 1238 admissions (Intramural and extramural).

We had 130 culture positive sepsis (9.3%), with 25.5% EONS and 74.5% LONS. Most common organism causing EONS, LONS in both intra-mural and extra-mural babies was K pneumonia. Second most common organism in EONS was A baumani and in LONS was E meningoseptica.

32% of the isolates were MDR and 15.4% of isolates were XDR and 5.5% of the isolates were qualifying for TDR. 55.5% of mortality in the unit could be attributed to sepsis. Culture positivity

was 19.5%. Case fatality rate was 39.2%. Sepsis screen positivity was 55.4%. Meningitis was present in 28 (21.5%) cases.

K pneumonia had a high propensity to cause NEC (17%) and pneumoperitoneum (14.9%). E meningoseptica sepsis had high incidence of meningitis (96.4%) and hydrocephalus (35.7%). 54.5% of Gram-negative sepsis presented with shock at diagnosis. Changing the first line antibiotics as Cotrimoxazole and Gentamycin, largely decreased case fatality, but not without a cost – Acute Kidney Injury. Cases also had longer hospital stay, higher incidence of BPD, longer duration of respiratory support, as compared to controls. Multidrug resistance seems to be increasing over years – 36.9% in 2022 vs. 53.7% in 2023 vs 82.6% in 2024.

Table 1: Comparing the demographical details and clinical status of cases and controls

	Cases (n=130)	**Controls (n=1108)**	**p value**
Outborn	42 (32.2%)	388 (35.1%)	0.687
Un-booked	67 (51.5%)	504 (45.5%)	0.547
Gestational age	30.4 (27, 33)	33.7 (31.9, 36.5)	0.016
Male	70 (53.8%)	562 (50.7%)	0.183
Birth weight	1246 (238)	1409 (347)	0.042
SFD	31 (23.8%)	307 (27.7%)	0.289
Mode of delivery NVD EMCS	 41 (31.5%) 82 (63%)	 476 (42.9%) 693 (62.5%)	0.610
PROM (Any hours)	16 (12.3%)	-	
PPROM >24 hours	10 (7.7%)	-	
Reason for admission Prematurity/ LBW care Post-resuscitation care Respiratory distress Major congenital anomalies	 116 (89.2%) 4 (3.1%) - 10 (7.7%)	 623 (56.2%) 96 (8.7%) 192 (17.3%) 174 (15.7%)	0.031
Any surgery	16 (12.3%)	105 (9.5%)	0.024
Central catheter	44 (33.8%)	205 (18.5%)	0.043
Duration of hospital stay	42 (29, 67)	25 (18, 47)	0.001

Table 2: Comparing the trend of sepsis over 3 years

	2022 (n=57)	**2023 (n=45)**	**2024 (n=29)**
Incidence of BSI per 1000 NICU admissions	113.7	97.2	105.8
EONS/ 1000 admissions	17.9	23.8	43.8
LONS/ 1000 admissions	95.8	73.4	62
MDR	10 (17.5%)	5 (11.1%)	3 (10.3%)
XDR	7 (12.3%)	17 (37.8%)	17 (58.6%)
TDR	1 (1.8%)	4 (8.9%)	1 (3.4%)
Case fatality rate	20 (35%)	22 (48.9%)	9 (31%)
Attributable mortality rate	55.5%	53.7%	33.3%

Table 3: Organism profile involved in EONS

		MDR	**XDR**
1	K pneumonia (17)	47%	29.4%
2	A baumani (4)	-	100%
3	E coli (4)	-	50%
4	Staph aureus (2)	MRSA (2) – 100%	VRSA (0)
5	Others (7)	28.5%	-

Table 4: Organism profile involved in LONS

		MDR	**XDR**
1	K pneumonia (30)	33.4%	33.4%
2	E meningoseptica (28)*		
3	E coli (15)	6.7%	53.3%
4	Staph aureus (9) + CONS (1)	MRSA (100%)	VRSA (-)
5	Others (13)	30.7%	-

*E meningoseptica is intrinsically resistant to B lactams and aminoglycosides. During study period, the organism was uniformly sensitive to cotrimoxazole, fluoroquinolone, vancomycin, linezolid, teicoplanin

Discussion

Thus, we can infer that, burden of sepsis is high and anti-microbial resistance is increasing. This leaves us with subsequently narrow options for neonatal care. Similar bacteriological profile and anti-microbial resistance was reported in other studies from various parts of India. Similar studies from other low-/ middle- income countries also reflect the burden of sepsis and AMR is high in India.

With similar trends, neonatology care in the next 20-30 years will be very challenging. Discussion in a national forum is warranted to emphasize the burden, call for leadership and pressing need for united front/ leadership in combating this challenge in current years and the years to come.

While the source of multi-drug and extensive-drug resistance can be debated, we call for interventions that can be done at unit-/ district-/ state-/ national- level to combat this emerging crisis/ smoldering epidemic. The need for the same and concern regarding growing AMR has also been emphasized in the last 5 years by many authors.

With NNF being established as a unifying force and solid organization with unlimited power, we call for intervention – in lines of NACO, RNTCP at an emergency basis to shape intact outcome in future.

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Comprehensive Outcomes of Rh isoimmunised pregnancies in a tertiary care center in Northern India

Abstract

Background: Evolution in antenatal care of neonates with rhesus hemolytic disease of the newborn (RHDN) in the last few decades has led to better outcomes. Studies evaluating neurodevelopmental and other postnatal outcomes in rhesus (Rh) isoimmunized infants from developing countries are sparse.

Objective: The objective of this study was to assess the mortality, neurodevelopmental and other postnatal outcomes of neonates, infants and children with rhesus hemolytic disease of the newborn. The study also included comparison of hydropic versus nonhydropic babies and foetuses who underwent intrauterine transfusion with those who did not, with respect to these outcomes.

Methods: A cross sectional study was conducted on infants & children of Rh isoimmunised pregnancies (delivered between December 2018 and December 2020) in a tertiary care referral neonatal unit in North India. Primary outcome was to study the Mortality and Neurodevelopmental outcomes assessed by DASII scale, starting at 12 months postnatal age upto 30 months corrected age. Secondary outcomes assessed were the duration of phototherapy, need of exchange transfusion, occurrence of late-onset anemia, conjugated hyperbilirubinemia and growth assessment.

Results: 41 newborns with RHDN were analysed. 30(73.1%) fetuses underwent intrauterine transfusion and 7 (17%) babies were hydropic. Median duration of phototherapy was 120 hours (IQR 96–120) and was not related with number of intrauterine transfusion. Of 41 neonates with RHDN, 23 (56%) neonates required exchange transfusion. Late-onset anemia was seen in 24 (58.5%) neonates. Only 1 neonate had abnormal neurodevelopment. There was no significant difference between motor and mental development quotients, incidence of hearing and/or visual impairment of hydropic babies versus non hydropic in our study. Similarly, there was no significant difference between motor and mental development quotients, incidence of hearing and/or visual impairment of babies who underwent IUT versus those who did not.

Conclusions:

Despite advances in perinatal care, short-term morbidities in neonates affected by RHDN mandate admission & intensive management. With optimum antenatal care at tertiary care level, neurodevelopmental outcome for these infants & children can be nearly normal.

Keywords: Rh isoimmunization, DVET, intrauterine transfusion, DASII

INTRODUCTION

Due to the highly immunogenic nature of rhesus D (Rh-D) antigen, maternal–fetal Rh factor incompatibility is a sinister issue that may lead to maternal Rh isoimmunization.(1–6) Rh isoimmunization can result in serious conditions, e.g. hemolytic disease of the fetus and newborn (HDFN), fetal or neonatal anemia, jaundice, kernicterus, and early fetal loss due to hydrops fetalis in subsequent pregnancies.(1,3,4,7) The most effective prophylactic strategy to reduce the incidence of Rh isoimmunization is administration of anti-Rh IgG.(1,3,4,8,9) This has decreased the rate of Rh isoimmunization marginally from 16 to 1.5–2%,(9,10) and further reduced to ~0.5% consequent to additional antepartum administration of anti-Rh IgG.(9)

The prevalence of the Rh-negative blood group varies among different populations with significant geographical variability worldwide. The incidence of the Rh-negative blood group among various ethnicities is described as follows: White populations (North Americans and Europeans): 15%; African populations: 4.8%; and Asian populations: 0.1–0.3%.(3,4,11). In a multicenter study, the incidence of Rh-negative pregnancies in Indian women was reported to be low, varying from 3.0 to 5.7%.(1,10)

The developed countries have reduced the incidence of Rh incompatibility-related fetal conditions due to more awareness, timely recognition & universal access to health services. However, Rh incompatibility-related perinatal mortality rate of approximately 1-2.5% has been reported for developing countries (3,4,12). Very few studies have been published describing the prevalence and outcomes of Rh-negative pregnancies in India (1,2,10,13). These included a limited number of participants and/or addressing a specific region. Therefore, their findings are not generalizable to the entire Indian scenario.

Thus, we conducted this study to address the gaps in knowledge in this important area to look for comprehensive short and particularly long term neurological outcomes of infants of Rh isoimmunised pregnancies.

MATERIALS AND METHODS

This was a cross sectional study conducted on infants & children of Rhesus isoimmunised pregnancies (delivered inborn between December 2018 and December 2020) in a tertiary care center in North India. The informed consent was taken from parents. Gestational age was obtained as per obstetrical estimates based on first-trimester ultrasonography or the date of the last menstrual period.

Our centre has has immense experience of intrauterine transfusions procedure for over ten years. The intrauterine transfusion at our centre is performed whenever indicated in case of fetal anaemia. Whenever middle cerebral artery peak systolic velocity in fetuses > 1.5 multiples of the

median, IUT and invasive fetal blood sampling was planned. IUT was done if fetal hematocrit < 30.

The study was approved by the institute's ethics committee via code number 2021-115-DM-EXP-38. Primary outcome was to study the Mortality and/or Neurodevelopmental impairment defined as DMeQ/DMeQ <70 on DASII scale, starting at 12 months postnatal age upto 30 months corrected age. Secondary outcomes assessed were the burden & outcomes of hydrops babies, duration of phototherapy, need for exchange transfusion, occurrence of late-onset anemia, conjugated hyperbilirubinemia, duration of hospital stay & growth assessment. Relevant data were collected in a pre-structured proforma.

Hydrops was diagnosed radiographically when there was evidence of fluid in ≥2 body cavities. Hour specific AAP 2004 normograms were used to decide threshold for exchange transfusion as per unit protocol in babies ≥35 weeks gestation. NICE charts were used for threshold in <35 weeks gestational age. Late onset anemia was defined as haemoglobin<10g/dl occurring after first week of life. Top-up transfusions were given when the Hematocrit was <20% with reticulocyte count <2% in an asymptomatic neonate or at higher levels if clinical symptoms of anemia (congestive cardiac failure, lethargy, feeding problems, or failure to thrive) were present.

After the enrollment parents were explained the procedure of neurodevelopmental assessment & hearing and vision evaluation. A telephonic reminder call was given one week before the scheduled date of appointment in Neonatology follow up clinic.

Developmental assessment:

Developmental assessment was done starting at 12 months of postnatal age with Developmental Assessment Scale for Indian Infants (DASII). This scale consists of 67 items for assessment of motor development and 163 items for assessment of mental development. The age placement of the items at the total score rank of the scale was noted as the child's developmental age. This converts the child's total scores to his/her motor age (MoA) and mental age(MeA).

The respective ages are used to calculate his/her **motor and mental development quotients** respectively by comparing them with his/her chronological age (CA) and multiplying it by 100. (DMoQ = MoA/CA x 100 andDMeQ = MeA/CA x 100).The composite DQ was derived as an average of DMoQ and DMeQ.

Visual assessment:

Beginning at 12 months corrected age, the age appropriate visual assessment was done. This included examination of the infant's ability to fixate and follow the objects, examination for presence of squint and fundus examination. Refraction testing was done by retinoscopy in infants having abnormalities on clinical examination by trained ophthalmologist at the institute.

Hearing assessment :

Our unit protocol is universal hearing screening by OAE for all babies and brainstem evoked response audiometry (BERA) in high risk neonates. Abnormal BERA was defined as poor waveform morphology, prolonged absolute latencies per normative data, ≥40 dB reception was planned to be followed with repeat BERA 2-4 weeks later.Hearing evaluation results of the study subjects were recorded to look for evidence of hearing impairment.

Relevant antenatal, perinatal & postnatal details were recorded in a structured proforma. Potential risk factors for Neurodevelopmental impairment were assessed included presence and severity of fetal hydrops at start of the intrauterine treatment, number of IUTs, gestational age at birth, perinatal asphyxia, need for resuscitation, severe neonatal morbidity, need of phototherapy and double volume exchange transfusions and number of blood transfusions in follow up period.

STATISTICS

Data analysis was done using IBM-SPSS statistics software 26.0. Discrete categorical data were represented in the form of either number or percentage (%).For normally distributed data, two groups were compared by Student's t test. For skewed data, Mann–Whitney test for two groups was applied. Chi square test or Fisher's exact test was applied for categorical data. All the statistical tests were two-sided and were performed at a significance level of α=0.05.

RESULTS

There were 822 deliveries during the study period. Number of Rh-negative isoimmunised cases was 43(5.2%). All babies survived till discharge, however, 1 patient expired in the postdischarge period and 1 was not contactable, therefore, 41 infants were analysed for short and long term outcomes including neurodevelopment, visual and auditory impairment. Median (IQR) gestation age and birth weight of the study cohort was 35(35-36) weeks and 2526(2205-2762) grams respectively. Nineteen (46.3%) babies were male. Seven babies had features of hydrops in antenatal ultrasound and 30 (73.1%) underwent intrauterine transfusion. Baseline characteristics are shown in Table 1.

Incidence of common neonatal morbidities were recorded as follows: respiratory distress syndrome (12.1%), sepsis (26.8%), meningitis(12.1%), shock(7.3%).There was no statistically significant difference in incidence of these morbidities between hydropic and non hydropic groups in this study.

Laboratory parameters are shown in Table 2. Median(IQR) hematocrit and bilirubin of cord blood was 39(36-43) and 4(3-6)respectively.

Clinical outcomes are shown in Table 3. All babies received phototherapy. Overall, the median duration of Phototherapy was 120 hours (IQR 96–120) with the median maximum bilirubin on Phototherapy of 12 (IQR 10-13) mg/dl. No relation was found between the number of IUTs and duration of phototherapy (spearman coefficient, ρ-0.1, p=0.45).

There was need of double volume exchange transfusion (DVET) in 23 (56%) babies. A total of 9 (21.9%) neonates required one DVET; 11(26.8%) required two DVETs, 1 (2.4%) required three DVETs and 2(4.8%) required even four DVETs. Median age of 1st DVET was 4 hours while 95% of total babies received DVET within 1st 6 hours. No correlation was found between the number of IUTs and DVET need (Spearman correlation coefficient, ρ -0.1; p=0.52).

Late-onset anemia- was noted in 24 (58.5%) newborns and 16 (39%) required at least one transfusion in the follow up period. Most (13 [81.2%]) of them were done within the first 6 weeks of life. There was no relation between the need of either IUT or DVET and need of transfusions in the follow up period. Cholestasis was observed in 5 (12.1%) neonates and was unrelated to IUT number. The median duration of hospital stay was 14 days (IQR 11–16).

Development assessment-

The median age at follow-up was 20(IQR 18-24) months. On DASII scale, median mental developmental quotient (DMeQ) was 96 (IQR 95-101) and median motor developmental quotient (DMoQ) was 96 (IQR 91-101). One baby had DMeQ of less than 70. None of the infants had bilateral or unilateral visual impairment/ocular abnormality or hearing impairment.

There was no significant difference between motor (p value-0.69) and mental developmental quotients (p value-0.46) of hydropic babies when compared to non-hydropic in this study. The duration of phototherapy was lesser in hydropic vs. non-hydropic group (3.36 vs. 4.84 days; p-0.046). When IUT vs. non IUT group was compared, it was observed that cord bilirubin was higher (5.2 vs. 3.65; p-0.044) while cord hematocrit was lower (38.44 vs. 41.24; p-0.339) in IUT group. There was no significant difference between other variables (Table 4).

Anthropometric measurements-

At the time of evaluation, growth parameters were plotted on WHO MGRS growth charts. None of the baby had wasting. 2 babies had stunting at the time of evaluation. None of the patients was noted to have head circumference/Age< -2 Z score as per WHO MGRS charts.

Discussion

With improving perinatal survival in the setting of RHDN, attention is shifting towards short & long-term outcome in survivors. Intensive care is still mandated in the presence of complications. Intrauterine transfusions are indicated in fetuses with anemia resulting from severe hemolysis. IUTs result in replacement of fetal red blood cells by fresh donor Rh-negative red cells which may attenuate degree of hemolysis and thus severity of neonatal jaundice. Previously studies have reported decreased PT duration with an increasing number of IUTs (15,16). However, no relation was found between the number of IUTs and duration of phototherapy (p=0.45, spearman coefficient-0.1) in this study.

DVET was required in 56% of our neonates and was unrelated to the IUT number; results are similar to that reported in previous published literature (15,16). The most likely explanations for

significantly high rate of DVET in the present study is the persistent haemolytic state despite IUT and the strict adherence to recommended thresholds of DVET in the setting of Rh-isoimmunization. Most of the DVETs were performed within the first 6 hours of postnatal life which is similar to finding by De Boer et al. (16).

Late-onset anemia was noted in 24 (58.5%) newborns out of which 16 babies (39%) required at least one transfusion in followup period. The proposed underlying mechanism could be ongoing gradual hemolysis, erythropoietic suppression resulting from IUT or intravenous immunoglobulin use, shortened life span of donor adult red cells, and persistence of anti-D antibodies in the bone marrow destroying erythroid precursors (17,18). The study did not find any correlation of the use of IUT, DVET, or reticulocyte count with top-up transfusions. Previous students show heterogeneous results with some studies favouring association of IUT, DVET, or reticulocyte count with increasing number of top-up transfusions (16,19) while others show no association/correlation so far(20).

Cholestatic jaundice was noted in 12.1% of the neonates and was unrelated to IUT number. This finding is comparable to the previously published literature (20).The likely proposed mechanisms include inspissation of bile pigment causing stasis and blockade of biliary canalicular system, hepatic damage due to iron overload, and hypoxic injury due to anemia.

One of the concerns despite successful use of IUT's is that a decrease in perinatal mortality may lead to an increase in children with long-term handicaps. Data about the relation between the severity of fetal anemia and long-term neurodevelopmental outcome is sparse. Previous small studies in developed countries have focused on the paediatric long-term neurodevelopmental outcome after IUT. Most follow-up studies showed that despite the severity of fetal hemolytic disease, developmental outcome for children treated with IUT is essentially normal (21). No Indian study has so far addressed neurodevelopmental outcomes of these infants and children.

On assessment using DASII scale, median mental developmental quotient (DMeQ)was 96(IQR 95-101) and median motor developmental quotient (DMoQ) was 96(IQR 91-101). A score of less than 70 was found in 1 (2.5%) baby in DMeQ and none of the babies in DMoQ domain. This baby with abnormal development was very preterm, had neonatal comorbidities & prolonged neonatal ICU stay. None of the infants had bilateral or unilateral visual impairment/ocular abnormality or hearing impairment. Previously published largest study LOTUS (Long-term followup after intrauterine transfusions) found the incidence of neurodevelopmental impairment (Cerebral Palsy, severe developmental delay, deafness and/or blindness) as 4.8% (22). However this large national cohort study was conducted in a developed world setting a decade back.

The underlying mechanism causing cerebral damage and long-term neurodevelopmental impairment (NDI) in hydropic and severely anemic fetuses is poorly understood. Cerebral lesions may result from hypoxic injury related to severe anemia. Since short- and long-term outcome

appears to be better in non hydropic fetuses, clinicians should try to prevent or reduce the development of hydrops in fetuses at risk for fetal anemia. Studies have shown the actual hemoglobin concentration to be more strongly associated with neurodevelopmental impairment than the hemoglobin Z-score.

There was no significant difference between motor and mental scores, incidence of hearing and/or visual impairment of hydropic babies when compared to non hydropic in our study. However in the LOTUS cohort, incidence of NDI was significantly higher in children with a history of mild and severe hydrops (22).

In the LOTUS cohort, NDI risk was significantly increased in the group of neonates born prematurely (gestational age at birth < 32 weeks) (OR 12.8, 95% CI 2.1-79.5, p = 0.006) but was not increased in the group of neonates born between 32 and 35 weeks (OR 1.8, 95% CI 0.5-7.0, p=0.38) and ≥ 35 weeks' gestation (22). This could not be assessed in our study due to small number of preterm subgroup.

This study is one of the few studies in developing world scenario comprehensively describing postnatal outcomes in RHDN. This study is also the first in the Indian setting addressing neurodevelopment and growth of these infants and children using validated tools.

This study provides recent data from a large tertiary referral centre in India. A previous publication from the same institute also provided data on postnatal outcomes of infants affected by rhesus hemolytic disease during another epoch (23).The limitations of the present study include small sample size which could be due to overall decreased incidence of RHDN. Also the study addresses the neurodevelopmental outcomes of a tertiary referral care centre population with vast experience of intrauterine transfusion procedure and a predominance of well followed up inborn neonates.

Conclusions

Although hemolytic disease of the fetus/newborn was the main cause of adverse perinatal outcomes in the past, the chance of successful recovery with adequate antenatal management can nowadays be considered good. With optimum antenatal management at tertiary care level, neurodevelopmental outcome for these infants & children can be nearly normal.

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Author's contributions

AS: Conceptualization, Methodology, Supervision. AS: Data curation. HK: Writing- Original draft preparation: HK & AR, AA: Visualization, Investigation. KN & AS: Reviewing and Editing. All authors have read and approved the manuscript.

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Availability of data and materials

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations-

Ethics approval and consent to participate-

This study was approved by Institutional Ethical committee of Sanjay Gandhi Postgraduate Institute of Medical Sciences (IEC code : 2021-115-DM-EXP-38). Written informed consent was obtained from the legal parent of the neonate.

Competing interests-

The authors declare that they have no competing interests

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Reemergence of a forgotten disease: Clinical spectrum of cases of congenital syphilis

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Introduction: Congenital syphilis, an emerging public health concern, often presents asymptomatically, complicating postnatal diagnosis. Early maternal screening and treatment during pregnancy, are crucial to prevent adverse neonatal outcomes.

Aims and objectives: To examine clinical manifestations and review the management of congenital syphilis.

Materials & methods: We reviewed four cases diagnosed in the last year, including CBC, LFTs, infantograms, and VDRL testing (blood and CSF).

Results: Case 1: A 35-week-old female neonate was born to a first-time mother with positive VDRL (1:32) and TPHA in the third trimester, who received penicillin for syphilis 30 days before delivery. The neonate had hepatosplenomegaly, thrombocytopenia, positive blood (1:1240), and CSF VDRL titers (1:8) but had normal LFTs and infantogram. Case 2: A 37-week-old female neonate, born to a second-time mother with maculopapular lesions during the third trimester. She tested positive (VDRL 1:64, TPHA) but was untreated. The neonate was asymptomatic with normal tests but had CSF pleocytosis and positive blood VDRL. Case 3: A 39-week-old male neonate, born to a first-time mother with untreated positive VDRL and TPHA in the third trimester. The neonate was asymptomatic but had positive blood VDRL. Case 4: A 39-week-old male neonate, born to a first-time mother with positive VDRL (1:64) and TPHA in the third trimester, received one penicillin dose. The asymptomatic neonate had positive blood VDRL (1:16). All neonates received 10 days of IV Penicillin G (highly probable: cases 2-4: possible) and are doing well on follow-up. All parents received penicillin treatment.

Conclusion: Raising awareness, ensuring maternal syphilis testing and treatment during pregnancy, and a national policy for maternal testing before discharge are the need of the hour for prevention. Early neonatal diagnosis and intervention are crucial to prevent adverse complications.

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HeRO MONITORING IN PREDICTION OF NEONATAL SEPSIS AND IN DETERMINING OUTCOMES IN PRETERM NEONATES – A PROSPECTIVE STUDY

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ABSTRACT:

INTRODUCTION:

Neonatal sepsis is an important cause of mortality and morbidity worldwide (1). In hospital settings, the incidence of culture proven neonatal sepsis is 16 per 1000 live births in India (2) In neonatal intensive care unit (NICU), abnormal heart rate characteristics (HRCs) that reflect decreased variability and transient decelerations have been associated with the presence of potential infection. The purpose of this study was to examine the relationship between sepsis and HRC elevations in clinical practice, using the HeRO (Heart Rate Observation) monitor. (3)

AIMS AND OBJECTIVES:

1. To determine the effectiveness of HeRO score in early prediction of neonatal sepsis.
2. To analyse if earlier prediction of sepsis using the HeRO score has an impact on mortality and other morbidities like NEC, duration of mechanical ventilation and duration of hospital stay.

MATERIALS AND METHODS:

STUDY DESIGN: A Prospective observational study

SETTING: Tertiary Neonatal Intensive Care Unit of Rainbow Children's Hospital, Chennai.

12 neonates were included in the study (cases), and their outcomes were compared with 12 controls.

INCLUSION CRITERIA:

1. Preterm neonates less than 34 weeks of gestation with Clinical sepsis admitted at Rainbow children's hospital during the study period.

EXCLUSION CRITERIA:

1. Major congenital or chromosomal abnormalities.
2. Congenital heart disease
3. Grade III/IV intraventricular haemorrhage
4. Periventricular leukomalacia.

STUDY PERIOD:

The study was conducted over a period of 3 months (December 1, 2023 to February 29, 2024)

INTERVENTION:

Using the HeRO score in early prediction of Neonatal Sepsis.

OUTCOME MEASURES:

1. To determine the effectiveness of HeRO score in prediction of neonatal sepsis in terms of sensitivity, specificity, positive predictive value, and negative predictive value
2. Co-relation of increase in HeRO scores with CRP, thereby analysing its co relation with neonatal sepsis.
3. Comparison of outcomes of neonates with Clinical sepsis, prior to usage of HeRO monitor and after its usage.

Primary outcome - Mortality rates between both the groups.

Secondary outcome - Duration of mechanical ventilation, NEC and duration of hospital stay.

STATISTICAL ANALYSIS:

Descriptive analysis was carried out by frequency and proportion for categorical variables. Continuous variables were presented as mean ± SD for normally distributed random variables and median ±interquartile range (IQR) for non-parametric data. Quantitative variables between two groups were compared using students t test. The Chi-square test was used to test the statistical significance of cross-tabulation between two categorical variables. Continuous variables between the two groups were compared using the Mann - Whitney U test. P value < 0.05 was considered statistically significant

RESULTS:

12 neonates with clinical sepsis who underwent HeRO score monitoring were compared with 12 matched controls in whom HeRO monitoring was not done. The sensitivity and specificity for HeRO score were 89% and 75% respectively. The Positive Predictive Value was 89% and Negative Predictive Value was 75%. There was significant co relation between increase in HeRO score with elevation in CRP. There was no mortality among the cases, whereas 2 neonates had died (16.7%) in the control group. The mean duration of mechanical ventilation was lesser (7 days) in cases and 10.6 days in controls, but there was no statistical significance. Sepsis related morbidities like, the requirement of HFOV, occurrence of seizures, oliguria, hypoglycaemia, and metabolic acidosis were more in the control group than in the cases. An inotropic score of more than 40 was present in only 41.6% of the cases compared to 67% of the controls.

CONCLUSION:

HRC monitoring using a HeRO monitor can aid in early prediction of neonatal sepsis, thereby improving the outcomes in terms of mortality and morbidity.

ABBREVIATION:

NICU - Neonatal Intensive Care Unit

HRC - Heart Rate Characteristics

HeRO - Heart Rate Observation

NEC - Necrotizing Enterocolitis

CRP - C – Reactive Protein

SD - Standard Deviation

HFOV - High Frequency Oscillation Ventilation

Mahabalipuram, also known as Mamallapuram, is a historic coastal town located in the Chengalpattu district of the southem Indian state of Tamil Nadu. Renowned for its ancient temples and impressive rock-cut sculptures, Mahabalipuram is a UNESCO World Heritage Site and attracts tourists, history enthusiasts, and pilgrims from around the world. It is just a one-hour drive from Chennai, a major cosmopolitan city in South India. Septemebr offers fine weather and is suitable for tourist activities. The town is situated along the Coromandel Coast, offering a unique blend of history and scenic beauty.

Mahabalipuram combines cultural heritage with natural beauty, making it a must visit destination for those interested in history, architecture, and the arts.

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