September 20th, 2023 13:30 - 15:00

SHORT ORAL PRESENTATION SESSION2 – CIRCULATION 1

ID 34. CYANOACRYLATE GLUE AS PART OF A NEW BUNDLE TO DECREASE NEONATAL PICC RELATED COMPLICATIONS

Professor fiammetta piersigilli[1], Sarah Yazami[1], giulia iacona[2], Dr Francesca Campi[3], Dr Katherine Carkeek[1], Dr Immacolata Savarese[3], Dr Catheline Hocq[1], Dr Olivier Danhaive[1]

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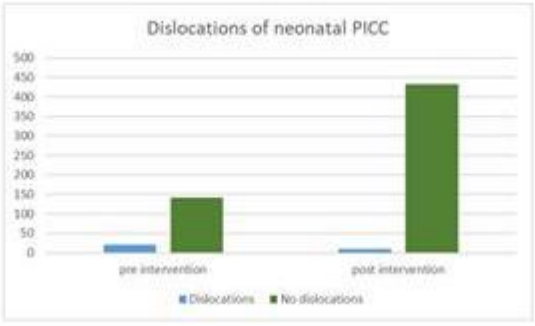
Background: Cyanoacrylate glue has been introduced in recent years to secure not only peripheral lines, but more recently central lines. A “bundle” is defined as a combination of evidence–based interventions that, if followed collectively and reliably, improve patient outcomes. The aim of this quasi–experimental study, conducted in two level–III NICUs in Belgium and Italy, was to assess the impact of central line dressing and maintenance bundle implementation on the rate of catheter–related mechanical complications (occlusion, breakage, thrombosis).

Methods: We performed a quality improvement (QI), prospective, before–after study. Prior to bundle implementation, PICC lines were secured by Steril–strips® and occlusive dressing. We implemented a new PICC bundle consisting of the use of glue, suture less device (Griplock®), a transparent dressing to secure the catheter to the skin, and catheter positioning verification after 24/48h and then weekly by ultrasound when possible or Xray. We compared the rate of mechanical complications and dislocations in pre– and post–intervention periods.

Results: During the pre-bundle period, there were a total of 162 catheters inserted across both sites, with few neonates receiving more than one catheter. The total rate of dislocations was 12.9 % (n=21). Post-implementation, we recorded 443 catheter insertions across both sites. The total number of dislocations for this study period was 10 (2.2 %, $p<0.05$). In NICU #1, 1215 PICC days were observed during period 1 and 3462 for period 2. During period 2, there was a significant increase from 9 to 11 days for the average number of days the catheter stayed in. We did not observe catheter breakage or patient skin irritations attributable to the glue (even in patients with a GA of 23 weeks).

Conclusions: The implementation of cyanoacrylate glue to secure neonatal PICCs in our NICUs was associated with a significant reduction in dislodgment rates, without glue-related complications. Active surveillance of PICC placement procedure, positioning and management, as well as analysis of related complications are crucial for improving patient safety. Continuous implementation of up-to-date central line bundles based on best practice recommendations is a key for quality improvement in NICUs.



Comparison of dislocations of neonatal PICCs in period 1 vs period 2

Comparison of dislocations of neonatal PICCs in period 1 vs period 2

None declared

ID 208. Nailfold capillaroscopy: a promising non-invasive approach to predict retinopathy of prematurity.

Professor Isabelle G. De Plaen[1], Assistant Professor Dan York[2], Associate Professor Gustave Falciglia[1], Associate Professor Hawke Yoon[1]

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Background: Abnormal microvascular development contributes to the pathogenesis of several diseases of prematurity such as bronchopulmonary dysplasia, necrotizing enterocolitis and retinopathy of prematurity (ROP). Unfortunately, there is currently no well-established non-invasive method for assessing and monitoring systemic microvascular development in premature infants. Useful in adult and pediatric rheumatology, nailfold capillaroscopy non-invasively assesses microvascular health. However, it has not been tested in premature neonates to monitor vascular growth. We hypothesize that nailfold capillaroscopy can non-invasively detect dysregulated angiogenesis and predict ROP in premature infants prior to its development.

Methods: In a cohort of 32 infants born < 33 weeks of gestation, 1,386 nailfold capillary network images of the 3 middle fingers of each hand were taken during the first month of life. Of these, 25 infants had paired data taken two weeks apart during the first month of life. Images were analyzed for metrics of peripheral microvascular density using a machine-learning-based segmentation approach and a previously validated microvascular quantification platform (REAVER Vascular Analysis). Results were correlated with subsequent development of ROP based on a published consensus ROP severity scale.

Results: Peripheral vascular density decreased significantly during the first month of life. In the paired timepoint analysis, vessel length density (VLD), a key metric of peripheral vascular density, was significantly higher at both timepoints among infants who later developed ROP (15,563 and 11,996 µm/mm2 respectively) compared with infants who did not (12,252 and 8,845 µm/mm2 respectively) ($p<0.001$, both timepoints). A VLD cutoff of > 15,100 at T1 or at T2 correctly detected 3/3 infants requiring ROP therapy. In a mixed effects linear regression model, peripheral vascular density metrics were significantly correlated with ROP severity.

Conclusion: Nailfold microvascular density assessed during the first month of life is a promising non–invasive biomarker to identify premature infants at highest risk for ROP before detection on eye exam.

"None declared"

ID 233. IMPAIRED ANGIOGENESIS IN THE DEVELOPMENTAL PROGRAMMING OF CARDIAC AND KIDNEY DISORDERS AT ADULTHOOD IN A RAT MODEL OF INTRAUTERINE GROWTH RESTRICTION

Mr Joseph Fang[1], Miss Manon Allouche[1], Pr Nicole Sekarski[2], Miss Thea Chevalley[1], Dr David Viertl[3], Dr Nathalie Rosenblatt-Velin[4], Dr Alexandre Sarre[1], **Doctor Catherine Yzydorczyk**[1]

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Background

Non-communicable diseases, cardiovascular diseases (CVD) and chronic kidney diseases (CKD), are the leading causes of mortality worldwide. The Developmental Origins of Health and Disease concept suggests that these chronic diseases have a part of origin in early life. Individuals born after intrauterine growth restriction (IUGR) are at risk of developing CVD and CKD later. Angiogenesis is a process of new blood vessel formation from existing vessels. Endothelial progenitor cells (EPCs) play a major role notably to stimulate postnatal angiogenesis. In the general population, impaired angiogenesis and EPC dysfunctions have been observed in CVD and CKD, but it remains inadequately established in individuals born following IUGR.

Methods

Throughout gestation, female rats were fed a control diet (23% casein, CTRL) or a low-protein diet (9% casein, IUGR). At 6 months of age, the following experiments in both groups/sexes (n=6 per group) were performed: left ventricle (LV) and kidney histology (hematoxylin/eosin, Sirius red), cardiac ultrasound and urine analysis (metabolic cage). CD34, lectin-TRITC, and VEGF were measured (immunofluorescence) on LV and kidney. EPCs were isolated from bone marrow (Ficoll gradient). Their number (flow cytometry), proliferation (BrdU incorporation), capillary-like structures formation capability (Matrigel) and NO production (DAF-2DA) were investigated. Oxidative stress (superoxide production (hydroethidine), antioxidant defenses (western blot)) and cellular senescence (lipofuscin deposit, factors associated (western blot)) were also assessed on EPCs, LV and kidney. A Mann-Whitney test was used with a significance level of $p<0.05$.

Results

Compared to CTRL, IUGR males showed a decrease in LV weight/tibia length ratio ($p<0.001$), and bigger but fewer cardiomyocytes ($p<0.05$). Their kidney displayed glomerular hypertrophy ($p<0.05$) and glomerulosclerosis. An albuminuria was observed ($p<0.05$). EPCs number and proliferation were reduced ($p<0.05$) with impaired capillary-like structures formation and NO production ($p< 0.05$). LV and kidney displayed a microvascular rarefaction and a decrease in VEGF expression ($p<0.05$). Oxidative stress and cellular senescence were identified in LV, kidney and EPCs. None of these dysfunctions were observed in IUGR females compared to CTRL.

Conclusion

We have identified a sexual dimorphism in the developmental programming of CVD and CKD following IUGR with EPC dysfunctions associated with impaired angiogenesis, oxidative stress and cellular senescence. None declared

ID 944. The Effects of Mydriatic Eye Drops on Cerebral Blood Flow and Oxygenation in Retinopathy of Prematurity Examinations: A Prospective Observational Trial

M.D Nursu Kara[1], **Assoc.Prof. Didem Arman**[1], M.D Zeynep Seymen[2], M.D Gökçen Eratlı[2], M.D Adem Gul[1], Professor Serdar Comert[1]

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Background: Mydriatic eye drops used during retinopathy examination have been associated with cardiovascular, respiratory and gastrointestinal side effects. The aim of our study was to investigate the effects of the drops used for pupil dilatation on cerebral blood flow and cerebral oxygenation.

Methods: The study included 62 infants who underwent retinopathy screening exams. Vital signs(heart rate(HR), arterial oxygen saturation(SpO2), and mean arterial pressure(MAP) were recorded. Cerebral oxygenation and middle cerebral artery blood flow were evaluated using near-infrared spectroscopy(NIRS) and Doppler ultrasonography, respectively.

Results: The mean gestational age of the infants included was 31,29 ± 1,42 weeks, and the mean birth weight was 1620 ± 265 g. Heart rate was found to be significantly decreased after mydriatic eye drop instillation; however, there were no significant differences regarding blood pressure, and oxygen saturation levels (HR: p<0,001; MAP: p=0,808 ; SpO2: p=0,663, respectively). While cerebral NIRS $rScO_2$ measurements were significantly decreased at 30th-60th minutes (p=0,02), no

significant difference was found in Vmax and Vmean of MCA before and after mydriatic eye drop instillation(p=0,755, p=0,515, respectively)
Conclusion: Our study has shown that, mydriatic drops used in retinopathy exam affect cerebral tissue oxygenation as well as vital signs. Further studies are needed to specify drug combinations and dosages, that will provide adequate dilatation with minimal systemic side effects, especially on vital signs and cerebral oxygenation.

None declared

ID 38. Home phototherapy for hyperbilirubinemia in term neonates – an unblinded multicentre randomised controlled trial

Doctor Miriam Pettersson[1,2], Professor Mats Eriksson[1,3], Doctor Andreas Ohlin[1,2]

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Background

Previous studies have been published about home phototherapy for hyperbilirubinemia but there has been a lack of randomized controlled trials. The aim of this study was therefore to assess whether home phototherapy is a safe alternative to hospital treatment.

Methods

This was a randomised controlled, multicentre, trial in which term newborns with a total serum bilirubin of 18–24 mg/dl (300–400 µmol/) were randomized to either home phototherapy or conventional in–hospital phototherapy. The inclusion criteria were a chronological age of more than 48 hours, a gestational age above 36 +0 weeks and a bilirubin above 20.5 mg/dl (350 µmol/L) after 72 hours of age. After inclusion, the patients were randomised, to either home phototherapy or hospital treatment.

The outcome measurements were parent–infant bonding, stress and measurements of safety and feasibility. A descriptive qualitative study based on interviews was performed as well as a health economic analysis.

Results

147 patients were recruited from 6 hospitals, 69 patients were randomized to conventional phototherapy and 78 to home phototherapy. Results showed no difference between groups in the safety and feasibility outcomes (Table 1) but home treatment failed in three patients and the total readmission rate was 4 %. Parents in the intervention group had better scores on bonding both at discharge ($p = 0.034$) and at 4 months ($p = 0.008$; effect size $r = 0.2$) and lower levels of stress at 4 months ($p = 0.024$) compared with controls. The interviews showed that parents felt secure at home. The cost per patient was €337 for home phototherapy compared with €1156 for the hospital alternative indicating average cost savings of €819 (95% confidence interval €613—1025) or 71% per patient.

Conclusion

Home phototherapy can be considered a safe and feasible alternative to hospital care for well selected patients. It improves bonding and stress for parents and reduces health care costs.

Since the first publication from this study was published home phototherapy is now recommended by the American Academy of Pediatrics as an alternative to hospital care for patients with uncomplicated hyperbilirubinemia.

	Home Phototherapy (n=78) median (IQ range)	Hospital (n=69) median (IQ range)
Duration of phototherapy, h	18.1 (15–28)	18.5 (16–28)
Length of stay, h	93.0 (54-119)	86.0 (50-119)
Number of bilirubin tests	4.0 (3-5)	4.0 (3-5)
Bilirubin, mg/dl	17.4 (15–20)	17.4 (16–20)
Weight gain, g	125.0 (55-195)	120.0 (50-182)

Table 1. Safety and feasibility outcomes

Table 1. Safety and feasibility outcomes

None declared.

ID 1006. Predicting the Risk of Mortality After Neonatal Cardiac Surgery: Comparison of Three Multiple Organ Dysfunction Scores

Doctor Handan Bezirganoglu[1], Nilufer Okur[2], Bedri Aldudak[2], Ozlem Gul[2], Fatih Ozdemir[2]

[1]Trabzon Kanuni Training And Research Hospital , Trabzon, Türkiye, [2]Diyarbakır Gazi Yasargil Training and Research Hospital, Diyarbakır, Türkiye

Background

Although various pediatric scoring systems have been evaluated to objectively assess postoperative mortality in the pediatric population with congenital heart diseases, similar scoring systems for neonatal cardiac surgery patients are currently lacking. This study aims to compare three different multiple organ dysfunction scoring systems: the Neonatal Multiple Organ Dysfunction (NEOMOD) score, the modified NEOMOD score, and the Pediatric Logistic Organ Dysfunction (PELOD) score in predicting postoperative mortality in neonates undergoing cardiac surgery.

Methods

This retrospective study was conducted between January 2019 to February 2021 in a single tertiary neonatal intensive care unit on infants who underwent cardiac surgery due to congenital heart disease in the first 28 days of life. Patients who underwent off-pump surgeries were excluded from the study. Demographic and clinical data were obtained by abstracting information from electronic records and patients' files. The NEOMOD, modified NEOMOD and PELOD scores in the postoperative initial 24–48 hours and 48–72 hours were calculated. The correlation between these scores, calculated in two time periods, and mortality was evaluated.

Results

Of the initial cohort of 172 infants who met the inclusion criteria, 14 patients who died within the first 24 hours after surgery were subsequently excluded from the study. The mean gestational age and birthweight for the entire cohort were 37.7±3.1 weeks and 3113±489 g, respectively. Of the infants, 57 (36%) had single ventricle physiology. The most common diagnoses were transposition of great arteries (43.9%) and hypoplastic left ventricle (17.2%). The modified NEOMOD score at postoperative 24–48 hours was found to best correlated with mortality with the greatest AUC receiver operating characteristic (AUC–ROC) compared to NEOMOD and PELOD score at 24–48 hours (0.808, 0.779 and 0.699 respectively). Similarly at the 48–72 hours, modified NEOMOD score had higher AUC (95% CI) value than other clinical scores (AUC–ROC=0.769, 0.734 and 0.733 respectively).

Conclusion

To our knowledge this is the first study that evaluates correlation between neonatal multiple organ dysfunction scores and postoperative mortality in neonatal cardiac surgery patients. Our findings suggest that the modified NEOMOD score at the 48th h could potentially serve as a predictor of mortality in this population.

none declared

ID 947. RED CELL DISTRIBUTION WIDTH: AN ADDITIONAL BIOMARKER IN NEONATAL SEPSIS?

Doctor R Sokou[2], Doctor G Ioakeimidis[2], Doctor E Tavoulari[2], Doctor S Parastatidou[2], Doctor P Kopanou Taliaka[2], **Doctor Eleni Karapati**[1], Doctor D Valianou[2], Doctor A Konstantinidi[2]

[1]Neonatal Department, Medical School, National and Kapodistrian University of Athens, Aretaieio Hospital, 11528 Athens,, Athens, Greece, [2]NICU, Nikaia General Hospital "Aghios Panteleimon", Piraeus, Greece, Athens, Greece

Background.
Red cell distribution width (RDW) is a numerical index determined by automatic analyzers, and reflects the degree of anisocytosis. Increased RDW values possibly indicate an underlying inflammatory condition and mirror disease severity, providing prognostic information on the outcome of critically ill patients. Recent studies support the use of RDW as a helpful biomarker in septic patients; however, its role in neonatal sepsis is not explicit. Our aim was to investigate a possible relationship of RDW values with neonatal sepsis and their prognostic role on morbidity and mortality of septic neonates.

Methods.
During a 3–year period, 119 neonates hospitalized with suspected or confirmed sepsis were studied. Healthy neonates of the maternity department of our hospital (n=164) served as controls. RDW values, time to achieve full enteral feeding, length of hospital stay, and mortality were recorded for all the neonates. Kruskal Wallis test, Mann–Whitney test, Pearson correlation coefficient, and multiple linear regression were used for statistical analysis (Spss 25.0).

Results.

Analysis of results showed that mean RDW values were significantly higher in septic neonates compared to the healthy ones and the neonates with suspected sepsis. For each unit of RDW rise, time to full enteral feeding and length of hospital stay were extended by 1.92 (95% C.I: 0,927–2,914, p=0,000) and 4.47 (95% C.I: 2,126–6,815, p=0,000) days, respectively. A significant increase in the risk of morbidity (sepsis: 62.5%, suspected sepsis: 37.4%) and mortality (37.9%) were also observed in the study neonates for each unit of RDW rise.

Conclusions. Our results demonstrate the diagnostic and prognostic role of RDW values in neonatal sepsis, which could contribute to its management. Further research is warranted for the confirmation and adoption of these findings.

None declared

ID 165. Which left atrial volume measurement should we use in neonatal intensive care patients?

Doctor Enrico Petoello[1], Professor Koert de Waal[1,2]

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Background

Left atrial (LA) enlargement is associated with cardiovascular disorders and risk of clinical heart failure. The echocardiography standard to assess LA volume (LAV) in adults and children are the biplane area–length method (AL) or method of disks (MOD). LAV in neonatal practice is usually derived from the parasternal M–mode ratio between the LA and the Aorta (LAAo) and often used to guide patent ductus arteriosus treatment. The aim of this study is to compare methods and determine feasibility and reliability of each method in clinical practice.

Methods

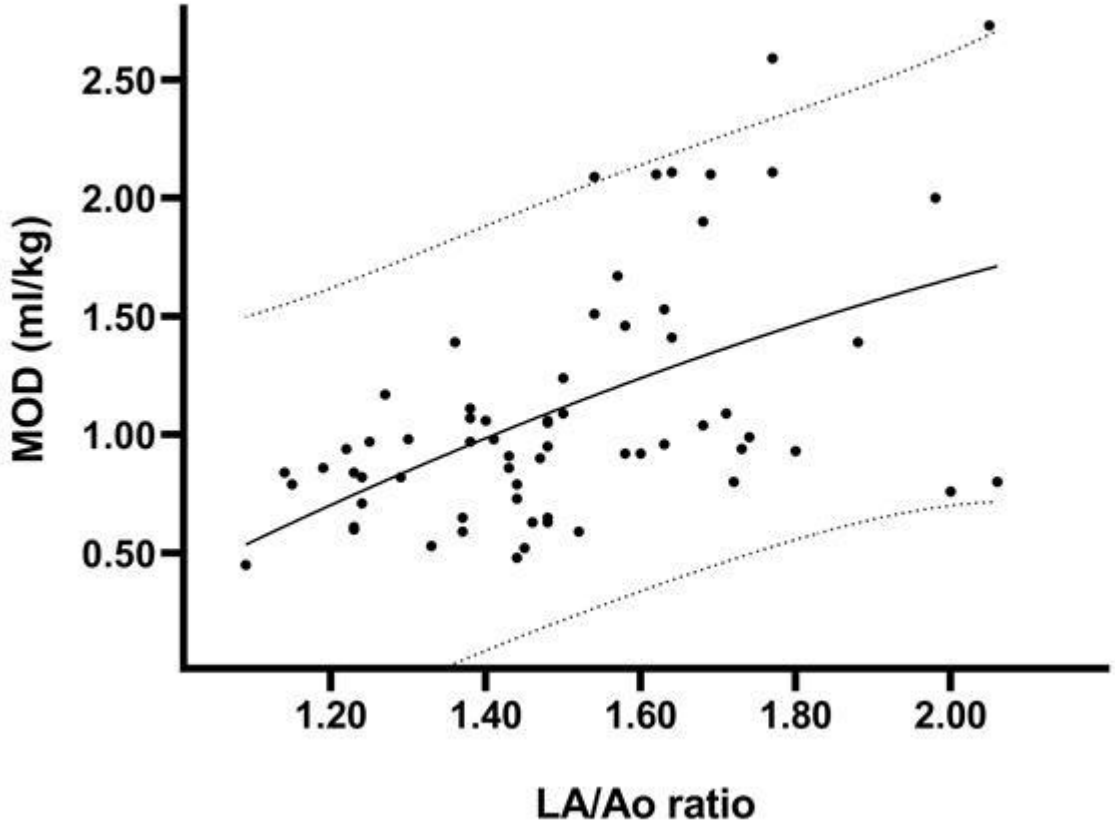
Clinically indicated echocardiograms in neonatal intensive care patients were retrospectively analysed. Feasibility of methods was determined by an image acquisition quality score detailing LA wall clearness, foreshortening and M–mode angle of insonation. M–mode dimensions were determined using the inner–edge method. LA endocardial borders were traced in the apical views excluding the appendage and pulmonary veins for biplane calculations of AL and MOD. Bland Altman analysis was used for agreement. Exams were analysed twice by one assessor and by a second assessor to determine intra– and inter–observer reliability.

Results

66 infants ranging from 24 to 37 weeks gestation were included thus far. Feasibility of M–mode and biplane apical images was comparable with a median quality score of 4 out of 6. Linear regression between AL and MOD was excellent (R squared 0.99) with a bias of +0.05 ml/kg (95%CI −0.05 to 0.15). LAAo as a ratio could not be compared directly. LAAo best–fit with MOD was reached with curve–linear regression (R squared 0.28) whereby a LAAo of 1.60 correlated with 1.24 ml/kg, but with a wide 95% CI (figure). The intraclass correlation coefficient within and between assessors for LAAo, AL and MOD was 0.90 (0.79–0.96), 0.98 (0.96–0.99), 0.99 (0.98–0.99) and 0.30 (0.00–0.63), 0.77 (0.53–0.90), 0.88 (0.74–0.95) respectively.

Conclusion

LAV methods were equally feasible. The AL method yielded 5% larger values than those of MOD. LAAo reliability was good when repeated by the same assessor, but poor when repeated by a different assessor. MOD was the most reliable method and is recommended as standard for neonatal clinical practice.



Curve–linear regression and 95% CI of method of disk (MOD) and the ratio between the M–mode left atrium and aorta dimensions (LA/Ao ratio)

Curve–linear regression and 95% CI of method of disk (MOD) and the ratio between the M–mode left atrium and aorta dimensions (LA/Ao ratio)

None declared

ID 462. Impact of cerebral oxygenation on neurodevelopmental short-term outcome, assessed by general movement analysis, during immediate fetal-to-neonatal transition in preterm neonates: A secondary outcome analysis of the COSGOD III trial

Doctor Christina Helene Wolfsberger[1,2], Doctor, PhD Bernhard Schwaberger[1,2], Professor Berndt Urlesberger[1,2], Professor Alexander Avian[3], Doctor, PhD Marlene Hammerl[4], Professor Ursula Kiechl-Kohlendorfer[4], Professor Elke Griesmaier[4], Doctor Marlies Bruckner[1,2], Doctor Johann Martensen[1,2], Doctor Lukas Schober[1,2], Professor Gerhard Pichler[1,2]

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Background:

General movement assessment (GMA) has the potential to provide early information on neurodevelopmental outcome. The aim of the present study was to compare the results of GMA at term-equivalent age in surviving preterm neonates according to the trial group allocation of the randomized-controlled multicenter COSGOD III trial.

Methods:

In this secondary outcome analysis, surviving preterm neonates of the COSGOD III trial, in whom GMA was performed between 37+0 and 42+0 weeks of corrected gestational age, were included. In the COSGOD III trial preterm neonates <32 weeks of gestation were randomized either to the NIRS-group or to the control-group. In the NIRS group, cerebral oxygen saturation [$crSO_2$] was continuously measured by

near–infrared spectroscopy in addition to routine monitoring within the first 15 minutes after birth to guide resuscitation. Neurodevelopmental short–term outcome by using GMA was compared between the two groups classified as normal or abnormal (poor–repertoire, chaotic, cramped synchronized) at term–equivalent age.

Results:
GMA was performed in two (Graz and Innsbruck) out of eleven centers participating in the COSGOD III trial. A total of 178 neonates were eligible and after exclusion of preterm neonates who died or who had no GMA between 37+0 and 42+0 weeks of corrected age, 102 preterm neonates were included in final analysis. Forty–nine preterm neonates were analyzed in the NIRS–group (gestational age 29.9 [28.1–30.7] weeks, birth weight 1190 [910–1485] grams) and 53 preterm neonates were analyzed in the control–group (gestational age 28.7 [26.1–31.0] weeks, birth weight 1000 [770–1450] grams). 55.1% of the neonates in the NIRS–group and 41.5% in the control–group showed normal GMA (relative risk (95%CI); 0.78 (0.52–1.13)). All neonates with abnormal GMA showed a poor–repertoire, no cramped–synchronized or chaotic pattern was observed.

Conclusion:
The influence of cerebral oxygenation guided treatment during immediate fetal–to–neonatal transition had no significant influence on GMA in very preterm neonates; only a trend towards normal GMA at term–equivalent age was observed in the NIRS–group.

None declared

ID 269. “The Ductus Analysis": Appraisal of a Patent Ductus Arteriosus Treatment Programme Based on the EL-Khuffash Severity Score in a Level Three Neonatal Intensive Care Unit.

Doctor Rachel Mullaly[1], Dr Aisling Smith[1], Prof Orla Franklin[2], Prof Naomi McCallion[1,3], Prof Afif EL–Khuffash[1,3]

[1]The Rotunda Hospital, Dublin, Ireland, [2]Department of Cardiology, CHI at Crumlin, Dublin, Ireland, [3]Department of Paediatrics, School of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland

Introduction

The management of a haemodynamically significant patent ductus arteriosus (hsPDA) in extremely preterm infants is an area of ongoing controversy. Our group recently devised a PDA severity score (PDAsc) that showed promise in potentially reducing the rate of chronic lung disease (CLD) when used to identify and treat high–risk infants with a hsPDA. In this study, we present the impact of early hemodynamic screening and treatment using the PDAsc in a cohort of preterm infants.

Methods

This is a retrospective cohort study of prospectively gathered data. From July 2020, our unit adopted a targeted hsPDA treatment approach based on the PDAsc: Infants with a gestation < 29 weeks underwent an echocardiogram between 24 and 72 hours to determine presence of a hsPDA and were treated with ibuprofen (or paracetamol in the presence of contraindications) if they were deemed high risk (PDAsc ⩾ 5.0). A repeat treatment course was administered if PDA patency was documented after the first course of treatment. This group (Epoch 2) was compared with a historical high–risk cohort who underwent screening using the PDAsc but were not offered treatment (Epoch 1). The composite outcome of CLD and mortality and its individual components were assessed.

Results

Eighty-five infants were included in Epoch 2 (active treatment) and were compared to 104 infants in Epoch 1 (no PDA treatment). Demographics and outcomes are demonstrated in Table 1. Infants in Epoch 1 had a higher birthweight, lower use of antenatal steroids and a higher rate of males. There was no difference in PDA diameter or PDAsc between the two groups. Infants in Epoch 2 had a lower number of ventilation days, CLD/Death and CLD alone. There was no difference in other outcomes, including mortality (all p values and odds ratios were adjusted for birthweight, male sex and antenatal steroids) (Table 1).

Conclusion

These data highlight that precise identification of high-risk infants is key to the success of early targeted PDA therapy. This study demonstrates the benefits of active screening and early targeted treatment of a hsPDA using the EL-Khuffash PDAsc in reducing respiratory morbidity in high-risk preterm infants.

	Epoch 1 n=104	Epoch 2 n=85	Adjusted OR (95% CI)	p
Demographics				
Gestation (weeks)	26.1 ± 1.3	25.7 ± 1.4	-	0.07
Birthweight (g)	863 ± 185	795 ± 194	-	0.02
Male Sex	70 (67%)	41 (48%)	-	<0.01
Caesarean-Section	62 (60%)	53 (62%)	-	0.70
Antenatal Steroids	84 (81%)	79 (93%)	-	0.02
First pH	7.31 [7.27 – 7.34]	7.29 [7.25 – 7.35]	-	0.06
PDA Severity Score	7.0 [6.0 – 8.4]	6.8 [5.9 – 8.4]	-	0.96
PDA Diameter (mm)	3.0 [2.6 – 3.4]	2.9 [2.1 – 3.4]	-	0.50
Outcomes				
Ventilation Days	14 [3 – 31]	8 [1 – 16]	-	<0.01
CPAP Days	35 [27 – 40]	39 [31 – 47]	-	0.44
Oxygen Days	28 [15 – 38]	51 [31 – 75]	-	<0.01
Treated Necrotising Enterocolitis	18 (17%)	18 (21%)	1.71 (0.77 – 3.79)	0.19
Severe Intraventricular Haemorrhage	12 (12%)	15 (18%)	1.94 (0.79 – 4.79)	0.15
Interventional PDA Closure	14 (14%)	14 (17%)	1.16 (0.49 – 2.72)	0.56
Death	17 (16%)	21 (25%)	1.94 (0.86 – 7.37)	0.11
Chronic Lung Disease	68 (78%)	39 (61%)	0.32 (0.13 – 0.72)	<0.01
Death or Chronic Lung Disease	85 (82%)	60 (71%)	0.44 (0.20 – 0.96)	0.04

Values are presented as means ± standard deviation, median (inter-quartile range), or count (%). Odds ratios and p values for outcomes were adjusted for birthweight, male sex, and antenatal steroids.

Table 1: Demographics and Outcomes of Epoch 1 and Epoch 2

Table 1: Demographics and Outcomes of Epoch 1 and Epoch 2

None declared

ID 584. Heart rate registration in neonates using a photoplethysmography (PPG)-integrated cap.

Miss Irma Pernot[1], Miss Joanne E Wieringa[2], Doctor Sara J Kuik[3], Doctor Robin van der Lee[4], Professor Willem Pieter de Boode[4]

[1]Jeroen Bosch Ziekenhuis, 's–Hertogenbosch, Netherlands, [2]Spaarne Gasthuis, Haarlem, Netherlands, [3]VieCuri, Venlo, Netherlands, [4]Radboudumc, Nijmegen, Netherlands

BACKGROUND

Critically ill newborn infants on the intensive care need continuous cardiorespiratory monitoring, generally electrocardiogram (ECG) and pulse oximetry.

In neonates born before 26 weeks' gestation, it is advised not to use standard electrodes for ECG–monitoring because of their vulnerable skin. Hence, heart rate in these infants is monitored by pulse oximetry, when an intra–arterial line is not (yet) available. This is associated with a high incidence of artefactual alarms due to movement of the neonate.

An innovative hat (SurePulse VS) has been developed using PPG with integrated leads, that enables the monitoring of the heart rate without using regular thoracic electrodes.

METHODS

We set up a prospective, single centre study to assess the agreement between the heart rate assessed with a dedicated cap with integrated PPG–leads and standard ECG monitoring as reference technique in different study groups. Heart rate was simultaneously measured by ECG–electrodes and PPG. We assessed the agreement using Bland–Altman analysis and limits of agreement (LOA) lower than ±10 bpm was considered clinically acceptable. We also studied the occurrence of bradycardia (<80

bpm) during the recorded period as an important clinical sign for which cardiorespiratory monitoring is indicated.

RESULTS

We analysed two groups. Group 1 consisted of 39 patients, GA >32 weeks without CPAP. Group 2 consisted of 37 patients, GA 26 — 32 weeks, with and without CPAP and GA >32 weeks with CPAP.

Table 1 summarizes the main results. In both groups we found the LOA within ± 10 bmp. CPAP did not seem to interfere.

In the recorded period we monitored 75 bradycardic events. Just before the start of 52 out of the 75 bradycardic events the PPG had a recording of the heart rate, but this recording was lost (11/52) or the bradycardia undetected (3/52) during 14 out of 52 events. In 38 out of 52 events (73%) the PPG detected the bradycardic events.

CONCLUSION

The PPG–monitoring was within the limits of clinical acceptable difference compared to ECG–monitoring and the use of CPAP did not interfere with the measurements. The detection of bradycardic events by PPG–monitoring, however, is currently insufficient.

Table 1.

	Group 1 (GA>32 wks; no CPAP)	Group 2 (GA 26-32 weeks with or without CPAP, GA> 32 weeks with CPAP)	Subgroup Group 2 with CPAP	Subgroup Group 2 without CPAP
Number of patients	39	37	19	18
Gestational age	34 + 2/7 weeks (30 + 0/7 – 41 + 1/7)	31 + 4/7 weeks 28 + 0/7 – 33 + 4/7)	30 + 2/7 weeks (28 + 0/7 - 33+4/7)	31 + 2/7weeks (29 + 2/7- 33 + 0/7)
Postnatal age at assessment	10 days (6-68)	14 days (2-49)	13 days (2-36)	14 days (4-49)
Weight at assessment	1840 grams (1012-4012)	1220 grams (716-2880)	1192 grams (870-2880)	1228 grams (716-1953)
Mean ECG HR (bpm)	151	159	157	160
Mean HR (bpm)	151	158	157	160
Mean bias (bpm)	0,67	0,58	0,5	0,61
SD (bpm)	3,35	3,11	3,38	2,83
LOA (bpm)	6,57	6,10	6,62	5,5
ULOA (bpm)	7,24	6,68	7,17	6,1
LLOA (bpm)	-5,90	-5,52	-6,06	-4,94
Bias%	0,44	0,37	0,35	0,38
Error%	4,36	3,85	4,20	3,48
Bradycardic events (N)	25	50	22	28
PPG signal before start bradycardic event (N)	21	31	16	15
PPG shows bradycardic event (N)	18	20	10	10
Loss of PPG signal during bradycardic event (N)	3	8	5	3

Data are represented in median (range), unless otherwise specified.

Mean ECG HR = mean heart rate measured by ECG
Mean HR = mean heart rate measured by ECG + mean heart rate measured by PPG/2
Bias = heart rate measured by ECG – heart rate measured by PPG
SD = standard deviation of the bias
LOA = limits of agreement = ±1.96 x SD; ULOA = upper limit of agreement = +1.96 X SD; LLOA = lower limit of agreement = -1.96 X SD
Bias%= mean bias / mean ECG HR x100
Error%= LOA / mean heart rate measured by ECG X100

none declared

ID 445. Preoperative predictors of worsened respiratory status after patent ductus arteriosus ligation in preterm infants.

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Introduction: Surgical ligation for hemodynamically significant patent ductus arteriosus (PDA) is sometimes required in preterm infants; however, some patients experience worsened respiratory status after the surgery. This study aimed to evaluate the risk factors that could predict worsened respiratory outcomes after PDA ligation.

Methods: A retrospective cohort study was performed on 57 preterm infants born at less than 32 weeks of gestational age and in whom the PDA was surgically ligated between January 2014 and December 2018 at Seoul National University Children's Hospital. Participants were divided into two groups: infants with worsened respiratory outcomes 14 days after ligation and control. Worsened respiratory outcome was defined as increase in respiratory severity score (RSS) by 30% or more at 14 days after ligation compared to RSS before ligation, or death at 14 days after ligation.

Results: Among the 57 PDA–ligated infants, 12 had worsened respiratory outcomes and 45 did not. The worsened respiratory outcomes were associated with oligohydramnios (adjusted OR 12.660, 95% CI 1.823—87.903) and decreased weight on the day of surgery (adjusted OR 0.995, 95% CI 0.990—0.999) compared to that in the control.

Conclusion: Worsened respiratory outcomes after PDA ligation appeared to be associated with oligohydramnios and weight on the day of surgery.

None declared

ID 606. Impact of postnatal corticotherapy by betamethasone on ductus arteriosus closure in extreme premature babies

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Background: Postnatal steroids can help to withdraw preterm infant with from ventilator. It is usually considered around the 4th week of life if ventilatory weaning failed. At that time some infants still have a patent ductus arteriosus (PDA) which negatively interferes with bronchopulmonary dysplasia. Betamethasone (BTM) have been proposed in infants with bronchopulmonary dysplasia (BPD). In utero constriction of ductus arteriosus (DA) has been reported 4 hours after BTM injection for fetal maturation. A similar effect has been reported in neonates with high doses of dexamethasone.

Aim: To evaluate the impact of postnatal betamethasone (BTM) on DA closure in preterm infants.

Methods: Monocentric, retrospective, study in very preterm infants (< 30 weeks) still needing assisted ventilation at 4 weeks of life and PDA at that time. Standardized echocardiographic evaluation of PDA was performed before, during and after oral BTM treatment (6 days course: 0.3 mg/kg/dose for the first 3 days, 0.15 for the next 2 days, and 0.05 on the last day). Evolution was considered favourable when DA was closed or non–hemodynamically significant (ductal diameter < 1.5 mm, continuous restrictive transductal flow, no left overload).

Results: Between 2018 and 2022, 51 preterm infants (median: 25 weeks and 720g) were included. BTM was administered at 28 days of life (extremes: 12 and 41), and total cumulative dose was 1.4 mg/kg with a maximum cumulative dose of 6,25 mg/kg.

After BTM, 98% of infants had a closed or non–hemodynamically significant DA. Evolution was favourable in 59% of infants at the end of the BTM treatment and 75% of infants within one month. No surgical ligation or catheterization was required. At the end of BTM treatment, only 6% of infants still needed assisted ventilation, versus 61% at the beginning of BTM treatment.

Conclusion: Oral BTM treatment could help to wean extremely preterm infants from ventilator and to close PDA, which to could reduce the need for surgical ligation or catheterism in this population.

None declared

ID 151. Platelet transfusion through long catheters in the Neonatal Intensive Care Unit: an in-vitro safety and feasibility study

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Background: There is very limited evidence available on transfusing platelets through long lines that are used in NICU — including umbilical venous catheters and peripherally inserted central catheters (PICC). There are anecdotal concerns that platelet transfusions could block long lines in NICU. Handling an unwell baby to site an extra PIVC for a platelet transfusion could This study aims to assess the safety and feasibility of platelet transfusion through small bore long lines used in the Neonatal Intensive Care Unit (NICU), including double lumen umbilical venous catheters and 24G (2Fr) and 28G (1Fr) peripherally inserted central catheters (PICC)

Methods: This prospective in–vitro controlled study recruited donors to donate platelet apheresis units for research. The study was approved by the REC. In–vitro platelet transfusions were set–up as per NICU practice in the Blood Services Laboratory. Transfusion line pressure was monitored. Post transfusion swirling, presence of aggregates, pH analysis and automated cell count were assessed. In–vitro activation response by flow cytometry assessing CD62P expression were assessed.

Results: All 80 transfusions completed successfully. Rate of infusion was reduced in 5/16 transfusions through 28G lines due to ‘pressure high’ alarms. There was no difference in swirling values or transfusion aggregate formation, CD62P expression

levels, platelet count, platelet distribution width, mean platelet volume, plateletcrit (PCR) or platelet–large cell ratio (PLCR) across transfusions post–transfusion.

Conclusions: This study showed that in vitro platelet transfusion performed through 24G and 28G neonatal PICC lines and double lumen UVCs is non–inferior to 24G short cannulas, using outcome measures of platelet clumping, platelet activation, and line occlusion. This suggests that where available these lines can be used if necessary for transfusion of platelets

None declared

ID.478 Impact of a haemodynamically significant patent ductus arteriosus on lung fluids assessed non-invasively in very preterm infants during the transitional period

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Background

The presence of a hemodynamically significant patent ductus arteriosus (hsPDA) is frequent in very preterm infants during the transitional period. The pulmonary overflow ensuing from the left–to–right transductal shunting may increase alveolar fluids which, in turn, can contribute to respiratory distress. Hence, monitoring lung fluids during early postnatal phases may provide useful information for preterm infants' clinical management.

This prospective observational study aimed to evaluate whether the presence of a hsPDA in very preterm infants during the transitional period may influence lung fluid contents, assessed non–invasively using lung ultrasonography and transthoracic electrical bioimpedance (TEB).

Methods

Infants <32 weeks of gestational age (GA) admitted to the Neonatal Intensive Care Units of IRCCS AOU Bologna and Niguarda Metropolitan Hospital of Milan (Italy) underwent daily lung and cardiac ultrasound assessments during the first 72h of life. A validated lung ultrasound score (LUS) was used to quantify lung fluids at each evaluation. Based on echocardiographic findings, the ductus arteriosus was classified

as hsPDA vs. restrictive or closed. A concomitant TEB monitoring was performed to simultaneously assess an index of thoracic fluid contents (TFC). Mann–Whitney U–test was used to compare LUS and TFC between hsPDA infants and those with a restrictive or closed duct; generalised estimating equation models were built to adjust significant comparisons for possible influencing covariates.

Results

Forty–six infants (median GA: 29 [interquartile range, IQR: 27–31] weeks; median birth weight: 1099 [IQR: 880–1406] g) were included. Compared to infants with a restrictive or closed ductus arteriosus, those with a hsPDA showed significantly higher LUS and TFC at each daily evaluation (see Table 1). These results were confirmed significant even after adjustment for GA and for the modality of respiratory support (invasive vs. non–invasive) ongoing at each evaluation.

Conclusions

The presence of a hsPDA can significantly increase pulmonary fluids even during early postnatal phases. Non–invasive techniques such as lung ultrasonography and TEB can be effectively used to monitor lung fluid clearance in preterm infants with a hsPDA.

	HsPDA	Restrictive/closed duct	P-value
Lung Ultrasound Score, *median (IQR)*			
Day 1	10 (7-12)	4 (2-9)	0.004
Day 2	12 (10-12)	5 (2-10)	<0.001
Day 3	12 (11-12)	7 (2-11)	0.004
Thoracic Fluid Contents, *median (IQR)*			
Day 1	49 (41-57)	36 (29-44)	<0.001
Day 2	49 (43-57)	40 (31-48)	0.008
Day 3	54 (50-58)	36 (30-44)	<0.001

None declared

ID 778. THE INFLUENCE OF HEMODYNAMICALLY SIGNIFICANT PATENT DUCTUS ARTERIOSUS ON LUNG ULTRASOUND SCORE IN THE FIRST MONTH OF LIFE OF VERY PRETERM INFANTS. A PILOT EVALUATION.

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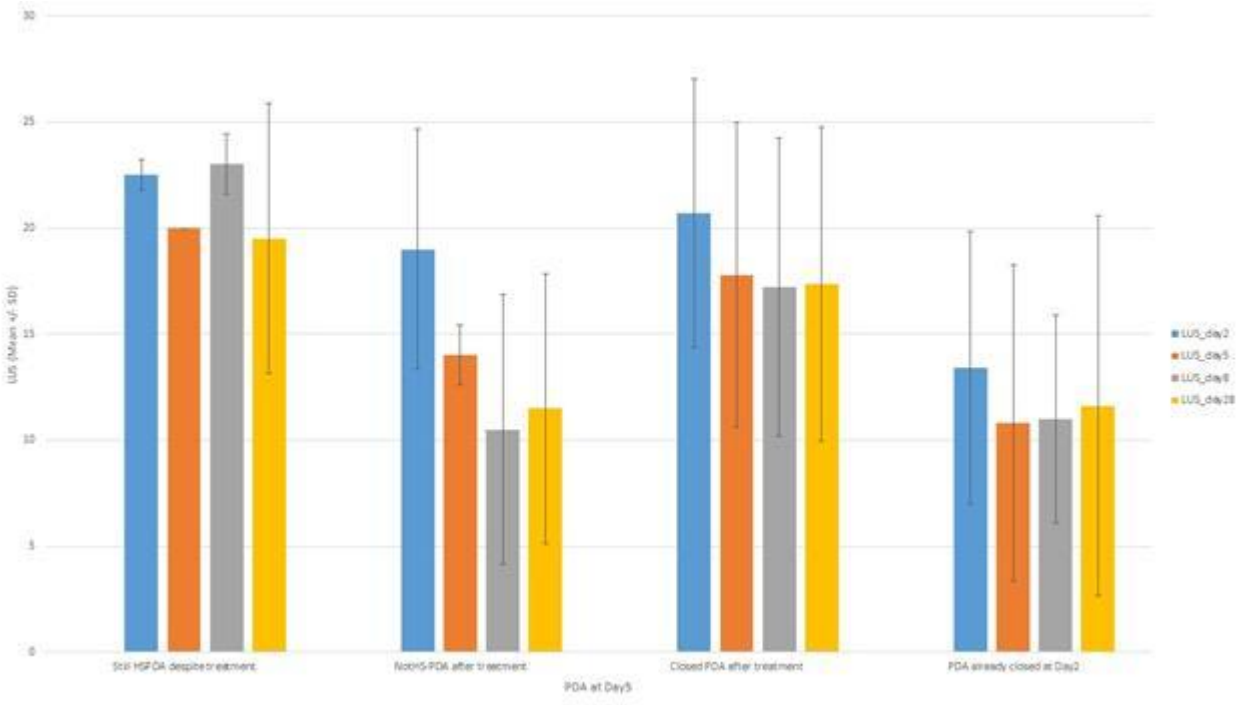
Background: Lung Ultrasound (LU) applications in the early life period of very preterm infants has shown interesting results. However, the influence of a possible confounding factor like patent ductus arteriosus (PDA) was only evaluated on the 4th day of life (DOL) showing how a hemodynamically significant patent ductus arteriosus (HS-PDA) increases Lung Ultrasound Score (LUS) probably increasing lung interstitial water content.

Objective: To evaluate the possible influence on LUS of HSPDA screened for an early targeted treatment approach (2nd DOL) and LUS evolution following HSPDA treatment.

Methods: All Very and Extremely Preterm Infants admitted to our NICU were prospectively included, screened for PDA and treated following an early targeted approach as per unit protocol. Moreover, they underwent serial LUS: at PDA screening on 2nd, 5th (eventual PDA treatment end), 8th (eventual 2nd PDA treatment end) and 28th DOL (to evaluate PDA's influence on LUS at distance). LUS of patients with and without HSPDA were then compared and a subgroup comparison was performed in the group with HSPDA between those with a successful treatment of

HSPDA and those with treatment failure. Only infants with RDS (treated with surfactant) were included, to exclude those with an initially lower LUS.
Results: Between October 2022 and April 2023 34 subjects were enrolled. 5 were subsequently excluded (3 for early death, 1 for pneumothorax and 1 for pulmonary hemorrhage). The remaining 29 had a mean gestational age (GA) of 26.9 weeks, and birth weight (BW) of 912 grams. 14 infants were diagnosed with HSPDA and 15 with notHS–PDA or closed PDA, without significant differences between the two populations. Those with HSPDA showed a significantly higher (p=0.004) LUS (21.86 +/– 4.418) compared to the others (14.73 +/– 7.206). 3 infants still showed HSPDA after treatment (5th DOL), these had no significant LUS differences compared with the whole other 26, but showed a significantly higher LUS compared with those 15 that were never diagnosed with HSPDA.

Conclusions: HSPDA seem to influence LUS of preterm infants already on the 2nd DOL. However, its subsequent successful treatment doesn’t seem to restore a LUS similar to those infants without HSPDA.



LUS trends for preterm infants divided on the basis of PDA status on the 5th DOL

LUS trends for preterm infants divided on the basis of PDA status on the 5th DOL

Non declared

ID 279. Neonatal jaundice in infants born at 37 weeks – Is NICE treating too many?

Doctor Mona Noureldein[1], Doctor Chloe Hill[1], Doctor Amira Ali[1], Doctor Shammah Gbenga–Ojo,[1], Doctor Morenike Adewuyi[1], Doctor Vikki Fradd[1], Doctor Pinki Surana[1]
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Background

The National Institute of Health and Care Excellence (NICE) treatment thresholds for jaundice at 37 weeks' gestation are much lower compared to their ⩾38 weeks counterparts and also when compared to the previous and updated American Academy of Pediatrics (AAP;2004,2022) guidelines. This increases the treatment burden and hospitalisation of 37–week infants, including mother–baby separation. Whether kernicterus develops at a lower serum bilirubin (SBR) level in 37–week infants compared to those ⩾38 weeks is unknown.

Aim

To ascertain the impact on admissions and medical interventions in jaundiced infants born at 37 weeks if they were managed based on NICE thresholds for ⩾38 weeks, previous(2004) and updated(2002) AAP thresholds for 37 weeks.

Methods

Electronic patient records of all infants born at 37 weeks with a birth–weight of ⩾2.5kg who required treatment for jaundice between April 2019 and March 2021 were retrospectively reviewed. Their SBR levels were plotted on the ⩾38weeks NICE and both 37weeks' AAP charts (2004,2022).

Results

We included 184 infants who had 188 episodes of inpatient phototherapy. Mean birth–weight was 3128g (SD±430g) and median age at admission was 36 hours (IQ 25–73hours). Of the 184, 102(55%) were admitted to the postnatal ward and 58(32%) to transitional care. Also, 23(13%) admitted to the neonatal intensive care unit for jaundice near exchange transfusion. Of the 23, 13(7%) received antibiotics and nine(5%) required intravenous fluids. None needed exchange transfusion or developed kernicterus. Their median duration of hospital stay was 45 hours (IQ 33–57hours).

Only 17(9%) would have needed phototherapy if NICE ⩾38 weeks' threshold was used ($p<0.00001$); 42(23%) and 19(10%) based on the previous (2004) and updated AAP (2022) guidance respectively ($p<0.00001$; Table 1). Meanwhile 10 (5.4%) infants had neurotoxicity risk factors as per AAP 2022 guidelines, only five qualified for treatment when plotted on higher–risk AAP 2022 charts (Table 1).

Conclusion

Applying AAP risk–based recommendations for 37–week jaundiced infants or using NICE threshold charts for ⩾38 weeks could significantly decrease treatment burden of infants born at 37 weeks. NICE should consider adopting risk–factor based approach to jaundice management to minimise treatment burden not only for 37–week infants, but across all gestations.

Table 1: Plotting serum bilirubin of 37-weeks infants on 38-weeks NICE, AAP 2004 and 2022 charts

	37-week NICE n=188 episodes	38-week NICE n=188	p#	AAP 2004 n=188	p#	AAP 2022 n=188	p#
No. infants needing phototherapy	188 (100%)	17 (9%)	<0.00001	43 (23%)	<0.00001	19 (10%)	<0.00001
No. infants whose SBR was above exchange transfusion	15 (8%)	2 (1%)	0.0012	7 (3.7%)	0.078	0	0.0002
No. infants needing phototherapy with risk factors of neurotoxicity	10*	-	-	-	-	5	
No. infants whose SBR was above exchange transfusion with risk factors of neurotoxicity	4	-	-	-	-	1	

SBR: serum bilirubin

Chi square comparing 37 weeks treatment threshold to 38 weeks NICE, AAP 2004 and AAP 2022 thresholds

* 8 infants had ABO incommutability, one had possible G6PD deficiency and one had maternal anti M antibodies

Table 1: Plotting serum bilirubin of 37–weeks infants on 38–weeks NICE, AAP 2004 and 2022 charts

Table 1: Plotting serum bilirubin of 37–weeks infants on 38–weeks NICE, AAP 2004 and 2022 charts

None declared

ID 665. The availability of the current evidence for pathophysiology-based management of compromised neonatal hemodynamics

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Background

Neonatal hemodynamic compromise, characterized by inadequate blood flow to the organs of a neonate, can arise from various underlying conditions. While there is a growing inclination towards a pathophysiology–based treatment approach, limited evidence exists to support this strategy using relevant outcomes. This study aims to provide an overview of the existing literature on trials investigating vasoactive medications for neonatal hemodynamic compromise, explicitly focusing on the underlying pathophysiology with primary outcomes being mortality, and adverse neurodevelopmental outcome.

Methods

This review encompassed various types of articles involving human subjects, excluding expert opinions and case reports. Studies not written in English or Dutch were also excluded. The study population included neonates experiencing hemodynamic compromise due to diverse underlying conditions, including inflammation, hypovolemia, persistent pulmonary hypertension of the newborn (PPHN), perinatal asphyxia, myocardial dysfunction, very low birth weight (VLBW), and

postnatal transition. The interventions analyzed in this review included adrenaline, alprostadil, dopamine, dobutamine, noradrenaline, hydrocortisone, vasopressin, and milrinone. The primary outcome measures were mortality and adverse neurological outcomes. Secondary outcome was blood pressure. The literature search was conducted in the MEDLINE database via PubMed, covering the period from January 1980 to March 2022.

Results

A total of 16 trials involving 711 neonates were identified. Table 1 provides an overview of the interventions investigated, the number of studies conducted, and the number of participants associated with specific pathophysiological origins within the study population, categorized by the outcomes of interest (with potentially overlapping interventions, conditions, and outcomes).

Conclusion

This review highlights a scarcity of evidence supporting the implementation of pathophysiology–based management strategies for compromised neonatal hemodynamics. Further research is needed to elucidate the efficacy and safety of vasoactive medications in this context, considering the underlying pathophysiological mechanisms.

Medication - outcomes	Pathophysiological origin: Inflammation Trials/ n	Hypovolemia Trials/ n	PPHN Trials/ n	Asphyxia Trials/ n	Myocardial dysfunction Trials/ n	VLBW Trials/ n	Transition Trials/ n
Adrenaline							
- Mortality	1 / 40	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 179
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 60
- BP	1 / 40	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 179
Alprostadil							
- Mortality	0 / 0	0 / 0	1 / 51	0 / 0	1 / 81	0 / 0	0 / 0
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- BP	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Dopamine							
- Mortality	1 / 40	0 / 0	0 / 0	0 / 0	0 / 0	3 / 94	5 / 238
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 60
- BP	1 / 40	0 / 0	0 / 0	0 / 0	0 / 0	4 / 160	5 / 238
Dobutamine							
- Mortality	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 35	0 / 0
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- BP	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	2 / 101	0 / 0
Noradrenalin							
- Mortality	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- BP	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Hydrocortisone							
- Mortality	1 / 40	0 / 0	0 / 0	1 / 35	0 / 0	1 / 22	0 / 0
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- BP	2 / 72	0 / 0	0 / 0	1 / 35	0 / 0	1 / 24	0 / 0
Vasopressin							
- Mortality	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 20	1 / 20
- NDI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- BP	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 20	1 / 20
Milrinone							
- Mortality	0/0	0 / 0	3 / 122	1 / 56	0 / 0	0 / 0	0 / 0
- NDI	0/0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
- BP	0/0	0 / 0	1 / 56	1 / 56	0 / 0	0 / 0	0 / 0

Table 1. An overview of the vasoactive medications investigated, the number of trials conducted, and the number of participants associated with specific pathophysiological origins within the study population, categorized by the outcomes of interest (all potentially overlapping). NDI, neurodevelopmental impairment, BP, blood pressure, PPHN, persistent pulmonary hypertension of the neonate, VLBW, very low birthweight

None declared