ID: 88  
**Title:** Do Hemodynamic Parameters Change After Separation of Omphalopagus Conjoined Twins? – A Prospective Observational Study Using Electrical Velocimetry (ICON)  
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**Content:**  
ICON™ is a non-invasive (NI) method of monitoring hemodynamic (HD) parameters continuously at the bedside to guide clinical management.  
The three components of HD assessment that affect cardiac output are preload, pump, and afterload.  
Using ICON,  
- a) Thoracic fluid content (TFC) and Stroke volume variation (SVV) reflect preload  
- b) Index of contractility (ICON) & Systolic time ratio (STR) measure cardiac contractility  
- c) Systemic vascular resistance (SVR) reflects afterload  

Stroke volume (SV) & Cardiac output (CO) are flow values that are continuously measured.  
Omphalopagus twins are joined at the abdomen and often share liver, digestive system or other organs which may impair HD and thus organ perfusion.  

Objectives:  
To prospectively record HD parameters in conjoined twins before and after successful separation through continuous NI bedside monitoring using ICON.  
Methodology:  
Omphalopagus conjoined twins born at 33 week gestation were separated surgically at 4 months of postnatal age at Sidra Medicine, Qatar.  
We measured hemodynamic parameters using ICON.  
The data recorded every minute prospectively was downloaded and grouped into Pre-operative 24 hours, Post-operative day 1, Post-operative day 2 and Post-operative day 3.  

Before surgery,  
SV and CO were higher in twin 1 compared to twin 2 and TFC, ICON and STR were higher in twin 2. These findings did not fit to the clinically observed hemodynamic conditions.  
Post operatively,  
- most of the parameters were comparable except the SVV which was higher in twin 2 suggesting decreased preload.  
Over the first 3 days after surgery, the preload and CO decreased in twin 1 suggesting distributive shock. This was later clinically confirmed as blood culture positive sepsis.  
On the contrary, in the twin 2, there was increased extracellular fluid that led to low urine output and this was reflected as increased TFC and decreased cardiac index as measured by the ICON. This was later confirmed clinically as progressive abdominal compartment syndrome requiring surgical intervention.
It is feasible to monitor the HD parameters continuously non-invasively in conjoined twins during pre- and post-operative periods. The trend of observed parameters postoperatively was useful to guide the management of HD disturbances early. However preoperatively, it is difficult to quantify electrical interferences and thus HD differences between the twins.

**IMAGES:**
https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=dddff3de10398ee79e8fda9453b5b23b-MjAxOS0wNSM1Y2UyNjY2YmM4Njg1

Table 1: Hemodynamic parameters in Twin 1 & Twin 2 Post op day 1 to 3

**COI:** None declared
ID: 113  
TITLE: A DECADE IN THE PERINATAL MANAGEMENT OF TRANSPOSITION OF GREAT ARTERIES IN A TERTIARY NEONATAL CENTER  
AUTHORS: Heba Hassan (1); Md Aamir (2); Alok Sharma (3)  
AFFILIATIONS: Neonatal Dept., Princess Anne Hospital Southampton UK  

CONTENT:  
Despite advances in prenatal ultrasound screening the detection rate of major congenital heart defects (CHD) as reported in the literature varies from 10% to 70%. D-TGA is the most common prenatally diagnosed congenital heart disease. The incidence is 3/10000 live births. Management of neonates with D-TGA varies in different parts of the world. Prenatal diagnosis and centralisation of care is key in ensuring these babies get appropriately stabilised prior to surgery. We have performed an observational study of the perinatal management of neonates with D-TGA over the last 12 years and give an overview of how management has evolved in a tertiary care NICU serving the south east of England.  

This was a single center retrospective study of D-TGA performed from 2006 to 2018. It was performed as a service evaluation. Ethical approval was waived. Data was collected from the medical records regarding demographics and epidemiology and entered onto an anonymised database. Prenatal diagnosis, postnatal diagnosis, place of delivery, management, septostomy and perinatal outcome prior to transfer for cardiac care were analysed. Prostin use, septostomy procedure and outcome at discharge from the NICU were recorded annually to evaluate whether there were any themes to diagnosis and practice. New guidance regarding stabilisation and Prostin was introduced in 2015. Septostomy rates and mortality were analysed in 2 epochs 2006-2015 and 2015-2018 before and after this change (Table 1)  

91 cases of D-TGA admitted over the 13-year period. 83 cases were diagnosed prenatally. 8 cases were diagnosed in the postnatal period. The median weight and gestation were 3345 gm (887-4845) and 39 weeks (25-41) respectively. The M:F ratio was 1.6:1. 85 cases were inborn and 6 were transferred from other units. 5/85 inborn babies were postnatal diagnosis as were 3/6 cases transferred in. 9/91 (10%) were preterm. Off the 91 cases managed 72 (79%) had Prostin and 48 (52%) ended having a septostomy for management. 43 cases (47%) did not get a septostomy prior to surgery. The overall mortality prior to transfer for cardiac care was 3/91 (4.4%). All these babies were preterm. Septostomy rates (43% vs 73%) and Prostin use (96.6% vs 74.5%) in inborn neonates have increased from Epoch 1 to Epoch 2. Mortality amongst inborn in epoch 1 was 1/55 (1.8%). There have not been any deaths in epoch 2.  
Prenatal diagnosis of D-TGA has increased over time with a median of 8 cases treated per year. The overall mortality remains low in term neonates whether diagnosed prenatally or postnatally. Mortality in preterm neonates with a diagnosis of D-TGA remains high. Using a standardised management approach has resulted in an increase in Prostin use and Septostomies on the NICU. This allows for better stabilisation prior to surgery.  

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Table 1  

COI: None declared
ID: 195
TITLE: NEONATAL PROLONGED JAUNDICE, THE OLD PROBLEM IN PEDIATRIC PATHOLOGY
AUTHORS: Sonia Tanasescu1, Tamasan Ionela1 Radmila Costachescu 1Simona Muntean2, Pop Liviu1
AFFILIATIONS: 1.University of Medicine and Pharmacy Victor Babes Timisoara - Pediatric Dep
2.Spitalul Timisoara County Emergency Clinic - Pediatrics Clinic II

CONTENT:

Neonatal jaundice is one of the most common conditions in the neonatal period that worries about indirect bilirubin through its neurotoxic property. Jaundice as cardinal symptom occurs in a wide variety of diseases in the neonatal period, translating to clinically by yellowing of the skin, mucous membranes and sclera due to bilirubin impregnation. Hyperbilirubinemia is an important and frequent long-term problem for the baby. It occurs when there is an imbalance between the production and elimination of bilirubin. Although bilirubin metabolism is well explained the mechanism involved in hyperbilirubinemia is not fully understood. We studied a total of 76 infants aged 10 days and four months hospitalized in Pediatrics II Timisoara during April 1, 2018 - 1aprilie 2019 after they were discharged from the maternity ward. All infants included in the study were aged ≥ 37 weeks of gestation and a total bilirubin ≥12mg / dl. We studied the following variables: gender, origin, age at admission, bilirubin value, type of food, type of birth, birth weight, maternal and neonatal risk factors for jaundice and treatment needs.

Our study revealed a serum bilirubin concentration over 15 mg / dl in 62 (82%) of 76 infants. Reported by gender, higher incidence was observed in males 62% vs. 38% females. We found significant correlations between increased bilirubin levels and natural nutrition, blood type incompatibility, type of birth, and perinatal complications. Breastfeeding has been associated with a total serum bilirubin concentration of over 15mg / dl and the need for phototherapy. Hyperbilirubinemia has also been associated with natural birth and the application of a vacuum extraction.

In conclusion, our study showed that breastfeeding is associated with prolonged severe jaundice and the need of phototherapy. There was no complication related to high bilirubin value and treatment with phototherapy.

COI: none declared
ID: 330
TITLE: DESCRIPTION OF TWO CASES OF NEONATAL PYKNOCYTOSIS: A RARE CAUSE OF HEMOLYTIC ANEMIA IN NEWBORNS
AUTHORS: Evangelos Christou 1, Konstantina Avgerinou 1, Maria Kourousi 1, Theodora Bachou 1, Varvara Douna 2, Mersini Mavrikou 1
AFFILIATIONS: 1. First Paediatric Department, Athens General Children’s Hospital “Pan. & Aglaia Kyriakou”
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CONTENT:

Infantile pyknocytosis is a rare cause of hemolytic anemia in newborns. Clinically it is characterised by jaundice with high values of indirect bilirubin on the first days of life and severe hemolytic anemia between the second and fourth week of life, for which multiple RBCs transfusions are often required. Hemolytic anemia automatically subsides at the age of 6 months. Diagnosis is set after excluding other causes of hemolytic anemia and by thoroughly investigating peripheral blood smear for pyknocytes. Etiology is yet unknown.

This is a case report about 2 female neonates, the first 17 days old and the second 22 days old, who presented with prolonged neonatal jaundice. The rest of the clinical examination for both infants, was insignificant. Laboratory tests for the first neonate showed: Hb: 8 gr/dL, RET: 2,4%, LDH: 661 U/L, Haptoglobin: 0 mg/dL, Total billirubin: 19,8mg/dL, Indirect billirubin: 19,3 mg/dL. Laboratory tests for the second neonate showed: Hb: 8 gr/dL, RET: 4,4%, LDH: 764 U/L, Haptoglobin: 1 mg/dl, Total billirubin: 18 mg/dL, Indirect billirubin: 16,6 mg/dl. In the peripheral blood smear of both neonates, we observed > 9% distorted, RBCs with spiky cellular membrane projections (pyknocytes), Fig 1. The rest of the laboratory tests on different causes of hemolytic anemia was normal. The first neonate was treated with phototherapy and three packed RBCs transfusions and was discharged after 21 days of hospitalization. The second neonate was treated with phototherapy and one packed RBCs transfusion and was discharged on the 12th day of hospitalization. During follow-up, until the age of 12 months old, both infants had a stable hemoglobin.

Neonatal pyknocytosis should be included in the differential diagnosis of the hemolytic anemia in newborns, when other causes have been excluded. It is a self-limited condition.

IMAGES:
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Peripheral blood smear during the haemolytic phase of infantile pyknocytosis, Erythrocyte morphological changes: bite cells, irregularly contracted cells (pyknocytes)

COI: The authors have no conflicts of interest to report
ID: 339

TITLE: THE IMPACTS OF MATERNAL FACTORS ON NEONATAL AND INFANT BLOOD PRESSURE: A SYSTEMATIC REVIEW.

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Laura Butte (5)
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6. Brighton and Sussex Medical School, UK

CONTENT:

A comprehensive understanding of the factors contributing to neonatal and infant blood pressure is vital in ensuring optimal provision of support for newborns to achieve safe blood pressure levels. There is an absence of a global consensus of the influential maternal factors, demanding a need for the collation of existing evidence around the topic.

A systematic search of published literature was performed in MEDLINE, PubMed, Embase, CENTRAL and CINAHL to identify papers relating to maternal factors affecting blood pressure of neonates up to 3 months of age. Summary data from eligible studies were extracted and compared.

A total of 5299 studies were identified and of these, 15 were eligible for inclusion. Topics elicited were sociodemographic factors, maternal health status, medications and smoking during pregnancy. Few studies reported on each maternal factor and provided inconsistent results about their influences on neonatal blood pressure.

Limited data and ambiguity in current published literature means that there is insufficient evidence to draw definitive conclusions about the extent to which the elicited maternal factors correlate with neonatal blood pressure. Further research is required to allow advancements in effective evidence-based practice.

COI: None declared
ID: 516

TITLE: IS SCREENING FOR CRITICAL CONGENITAL HEART DISEASE USEFUL AT THE FIRST HOUR OF LIFE?

AUTHORS: Elif Keleş1, Fatma Canbeyli2, Esra Önal1, Canan Türkyılmaz1, Semiha Tokgöz2, Melda Taş1, Münevver Baş1, Aytaç Kenar1, Başak Kaya Gürsoy1, İbrahim Murat Hırfanoğlu1, Ebru Ergenekon1, Esin Koç1

AFFILIATIONS: 1. Neonatology, Department of Pediatrics, Gazi University Faculty of Medicine, Ankara, Turkey
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CONTENT:

Congenital heart disease (CHD) is the most common congenital abnormalities in the newborn. Although many neonates with critical CHD (CCHD) are symptomatic and are recognized immediately after birth, some infants are discharged without diagnosis. In infants with CCHD, delay in diagnosis increases morbidity and mortality. Ideal recommended screening time is 24th-48th hour of life. CCHD screening is performed at the 1st and the 24th hours of life with the purpose of decreasing these risks in our study. We aim to determine the time of CCHD screening at the 1st and 24th hours following uneventful delivery in order to reduce the mortality and morbidity caused by early discharge.

Infants born in our university hospital between August 2016 and February 2019 were included in the study. In addition to physical examination, preductal and postductal oxygen saturation and perfusion index were measured at the 1st, 24th and 72th hours post-birth by a new-generation pulse oximeter (Massimo Radical 7). The positive screening was defined as post-ductal oxygen saturation (SpO2) 3% or PI <1.2. Patients who required pediatric cardiology consultation as a result of physical examination and pulse oximetry test were evaluated by echocardiography.

In our study, 18 of 1020 infants were antenatally diagnosed with CCHD (See Table for demographics). One infant without antenatal diagnosis was diagnosed with screening. Sensitivity of the first hour measurement was 94.4%, specificity 94.2%, positive predictive value (PPD) 23.2%, and negative predictive value (NPD) 99.9%. The sensitivity of the measurements performed at the 24th hour was 94.4%, specificity 93.4%, NPD 27% and PPD 99.8%. There was no significant difference between the first hour and 24th hour preductal/postductal saturation measurements; although there was a significant difference between the first hour and 24th hours in the preductal and postductal perfusion index (p<0.001). Perfusion index was increased at 24 hours due to the adaptation of postnatal physiology. Saturation parameters were more reliable for decision making in CCHD.

There have been large number of infants who are discharged before the 24th hours of life. 1st hour screening results in early discharge may be useful in diagnosis of CCHD. Studies with larger cohorts are needed to investigate the utility of CCHD screening within the first and 24th hour of life.

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COI: None declared
ID: 672  
TITLE: ASSESSMENT OF COAGULATION DISORDERS IN CRITICALLY ILL NEONATES: THROMBOELASTOMETRY OR CONVENTIONAL COAGULATION TESTS? THE EXPERIENCE OF AN NICU. 
AUTHORS: Rozeta Sokou, Aikaterini Konstantinidi, Stavroula Parastatidou, George Ioakeimidis, Katerina Lampropoulou, Maria Lampridou, Konstantinos Adamopoulos. 
AFFILIATIONS: NICU, Nikaia General Hospital “Agios Panteleimon”, Piraeus, Greece 

CONTENT: 

Coagulation disorders in critically ill neonates as well as transfusions of blood products correlate with increased morbidity and mortality. It seems that conventional coagulation tests are not reliable in detecting platelet or fibrinolysis derangements and also present limitations in predicting bleeding events and guiding transfusion therapy. On the contrary, evaluation of hemostatic disorders using viscoelastic methods allows for rapid detection of coagulopathy and goal-directed therapy. The aim of the study was to assess the diagnostic accuracy of both thromboelastometry and the conventional coagulation tests in evaluating hemostatic disorders in critically ill neonates.

We recorded laboratory tests conducted in order to assess coagulation status in 5 hospitalized neonates in our NICU, with clinical presentation of bleeding events.

Conventional coagulation tests (aPTT, PT, INR, fibrinogen) were within normal limits in 3 neonates and non-diagnostic in the remaining 2 neonates. In contrast, simultaneously performed thromboelastometry timely detected a coagulation disorder in all these neonates, and identified its cause; deficiency of platelets or coagulation factors, or reduced fibrinogen functionality. Thus, thromboelastometry guided our therapeutic approach. In 1 neonate, hemorrhage was attributed to maternal administration of high dose low molecular weight heparin. In another neonate, while conventional tests improved following a therapeutic intervention, thromboelastometry detected aggravation which was corroborated by clinical deterioration of the patient.

Conventional coagulation tests seem to be inferior in the diagnosis and management of hemorrhagic conditions. The cases reported here correspond with our previous experience of thromboelastometry use in NICU, confirming this method to be diagnostic, effective and practical. Accordingly, thromboelastometry appears to establish its role as a crucial diagnostic tool and a guide to transfusion therapy in neonates.

COI: None declared
ID: 710

TITLE: MODELING OXYGEN EXPOSURE DURING CARDIOPULMONARY BYPASS CIRCULATION IN THE NEWBORN

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2 Lund University, Skane University Hospital, Department of Clinical Sciences Lund, Pediatrics, Lund, Sweden

CONTENT:

Cardiopulmonary bypass circulation in the newborn challenges the immature physiology with supranormal oxygen tensions. In this study, we aimed to quantify oxygen exposure during cardiopulmonary bypass circulation to define an independent variable when assessing systemic oxidative stress response.

40 neonates born with critical congenital heart defects requiring open heart surgery on cardiopulmonary bypass within thirty days of life were included. Oxygen exposure during cardiopulmonary bypass circulation was quantified using arterial blood gas analyses obtained hourly, and flow(Q) in the bypass circuit to estimate DO2. Oxygen exposure models incorporating Q, or pO2 only, were plotted against time on cardiopulmonary bypass, and AUC were calculated using trapezoid method. Neonates requiring selective cerebral perfusion were grouped into a separate category.

One patient was excluded due to bypass time less than 60 min. Initial pO2 during cardiopulmonary bypass circulation was in our study 29.8(15.9) (median(IQR)) kPa. When calculating a fictive normoxic exposure assuming a time of 180 min on bypass (median time on bypass in our cohort was 181 minutes) and a pO2 of 10 kPa, all neonates but one experienced a supranormal oxygen exposure. AUC of oxygen exposure plotted against time shows a good discrimination between subjects, see fig 1. Adding Q to the calculations did not result in an improved discrimination.

Cardiopulmonary bypass circulation presents the newborn physiology with supranormal oxygen tensions. Quantifying oxygen exposure during cardiopulmonary bypass circulation using AUC is a feasible method with a good discrimination between subjects. If the supranormal oxygen tensions translates into systemic oxidative stress and end organ damage remains to be investigated.

IMAGES:

https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=9662a74a8be8f123574ff7fcf2bf3d02-MjAxOS0wNSM1Y2UyNjY2Y2M2MDIx

Oxygen exposure calculated as AUC in all patients. Normoxic exposure is indicated by dotted line.

COI: None declared
TITLE: HOW SKIN ANATOMY INFLUENCES TRANSCUTANEOUS BILIRUBIN DETERMINATIONS
AUTHORS: Marlijn van Erk 1; Lida Dam-Vervloet 2; Foky-Anna de Boer 3; Martijn Boomsma 4; Irma van Straaten 5 Nienke Bosschaart 6
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CONTENT:

Transcutaneous bilirubinometry is an effective screening method for neonatal hyperbilirubinemia. Current transcutaneous bilirubin meters are designed for the ‘standard’ situation of transcutaneous bilirubin (TcB) determinations on the forehead, or sternum of term newborns. We hypothesize that skin anatomy can considerably influence TcB determinations in non-standard situations – e.g. on preterm newborns, or alternative body locations.

A commercially available bilirubin meter (JM-105) was evaluated on phantoms that accurately mimic neonatal skin. We varied the mimicked cutaneous hemoglobin content (0–2.5 g/L), bone depth (0.26–5.26 mm) and skin maturity related light scattering (1.36–2.27 mm-1) within the clinical range and investigated their influence on the TcB determination. To obtain a reference frame for bone depth at the forehead, the magnetic resonance head scans of 46 newborns were evaluated.

The TcB meter adequately corrected for hemoglobin content. However, TcB determinations were influenced considerably by clinically realistic variations in bone depth and light scattering, with deviations up to 72 μmol/L. This greatly exceeds the specified accuracy of the device (±25.5 μmol/L).

As bone depth and light scattering vary with gestational maturity and body location, caretakers should be cautious when interpreting TcB measurements on premature newborns and non-standard body locations.

COI: none declared
ID: 934

TITLE: IS LOW SERUM ALBUMIN ASSOCIATED WITH POSTOPERATIVE COMPLICATIONS IN NEONATES UNDERGOING CARDIAC SURGERY?

AUTHORS: Handan Bezirganoglu 1; Kiymet Celik 1; Nilufer Okur 1; Fatih Ozdemir 2; Onur Doyurgan 2; Osman Akdeniz 3; Murat Surucu 3; Bedri Aldudak 3

AFFILIATIONS: 1 Neonatology Unit, Department of Pediatrics; Dr. Gazi Yasargil Education and Research Hospital, Diyarbakir, Turkey
2 Department of Cardiovascular Surgery; Dr. Gazi Yasargil Education and Research Hospital, Diyarbakir, Turkey
3 Pediatric Cardiology Unit, Department of Pediatrics; Gazi Yasargil Education and Research Hospital, Diyarbakir, Turkey

CONTENT:

Serum albumin concentration which mainly depends on nutritional intake can be rapidly suppressed in metabolic stress and used as a negative acute phase reactant. Although it has been widely used as an early predictor of clinical outcomes after surgery in adult studies, knowledge about neonatal period is scarce. The aim of this study was to evaluate the role of preoperative (pre-op) and postoperative (post-op) albumin levels as a predictor of clinical outcome in neonates who undergo operative correction of congenital heart disease (CHD) with high mortality risk.

We conducted a retrospective cohort study of infants cared for at a single tertiary care neonatal intensive care during February 2017 and April 2019. All infants with CHD who admitted to neonatal intensive care unit (NICU) for postoperative care were included. Serum albumin concentration was obtained before surgery and on the first postoperative hours as a unit policy. Maximum decrease in albumin level defined as the difference of pre-op final albumin level and the lowest post-op level (∆Alb). The primary outcome was mortality, acute renal injury, hepatic failure, duration of mechanical ventilation, total duration of respiration and duration of hospitalization was recorded as secondary outcomes.

A total of 68 patients were included in the study. Mean gestational weeks and birth weights were 38 (± 0.96) weeks and 3149 (± 371) gr, respectively. There was no correlation between ∆Alb value and mortality. However total respiratory support duration and length of hospitalization were longer in patients with low pre-op albumin levels (p = 0.038, p = 0.023). The effect of pre-op and post-op albumin on other outcomes was not significant.

Low albumin levels following cardiac surgery in neonates could be a promising predictor for adverse neonatal outcomes. The reason for not detecting a significant relationship between ∆Alb and mortality is may be due to use of intraoperative albumin infusions in some patients.

COI: None declared
ID: 945

TITLE: THERAPEUTIC HYPOTHERMIA IN ASPHYXIATED NEWBORNS WITH SEVERE CONGENITAL HEART DISEASE

AUTHORS: Vinzenz Boos 1,2; Felix Berger 1; Christoph Bührer 2

AFFILIATIONS: 1 Department of Congenital Heart Disease / Pediatric Cardiology, German Heart Centre Berlin, Berlin, Germany.
2 Department of Neonatology, Charité - Universitätsmedizin Berlin, Berlin, Germany.

CONTENT:

Perinatal asphyxia can lead to hypoxic ischemic encephalopathy (HIE), an important cause of acute neurologic injury at birth. Induction of moderate systemic hypothermia or selective head cooling, started within six hours after injury, has become standard of care to improve neurologic outcome in surviving neonates with perinatal asphyxia and clinical signs for HIE. Newborns with severe congenital heart disease (CHD) are at increased risk of perinatal hypoxic injury. However, large clinical trials on therapeutic hypothermia in asphyxiated newborns have excluded patients with CHD. We seek to investigate feasibility and safety of this method in CHD patients.

Patients with severe, ductal-dependent CHD, a gestational age > 35 completed weeks at birth, and perinatal asphyxia were included and analyzed over a period of six years in this retrospective observational study. All patients received prostaglandin E1 infusion for ductal maintenance immediately after birth, until cardiac surgery or death. Patients who demonstrated signs for HIE were treated with moderate systemic hypothermia at 33-34°C for 72 hours. After completion of the hypothermia protocol and rewarming, all surviving patients received cardiac surgery within the first two weeks of life.

Seven patients were diagnosed with HIE after perinatal asphyxia and suffered from ductal-dependent CHD. Cardiac diagnosis was d-transposition of the great arteries (d-TGA) in six patients, and hypoplastic left heart syndrome (HLHS) in one patient. The patient with HLHS died due to acute cardiac failure after 15 hours of life. Therapeutic hypothermia was discontinued after 19 hours in one patient with d-TGA due to severe arterial hypotension. Five patients with d-TGA completed 72 hours of cooling. During hypothermia, all patients required mechanical ventilation for respiratory failure, and common side effects were arterial hypotension requiring inotropic support, and pulmonary hypertension requiring treatment with inhaled nitric oxide. All six surviving patients had a successful cardiac surgery (arterial switch operation) without major perioperative complications after rewarming.

Therapeutic hypothermia can be a viable option for patients with severe CHD and perinatal asphyxia, with the objective of preventing brain injury in patients with HIE. Hypothermia compromises neither the efficacy of low-dose prostaglandin E1 in ductal-dependent CHD nor the safety of subsequent cardiac surgery, but cardiopulmonary adverse effects during cooling should be anticipated.

COI: None declared
ID: LATE BREAKER
TITLE: NEAR-INFRARED SPECTROSCOPY ASSESSMENT OF COGNITIVE CORTEX HEMODYNAMICS IN PREMATURE LATE-ONSET IUGR NEONATES COMPARED TO AGA PEERS DURING THE EARLY POSTNATAL PERIOD
AUTHORS:
AFFILIATIONS:

CONTENT:

Background: Intrauterine growth restriction (IUGR) affects 5–10% of newborns and is associated with neurodevelopmental and cognitive dysfunctions. Despite hemodynamic brain sparing, complex microstructural changes occur in the IUGR brain, total brain blood flow is reduced and structural integrity of the neurovascular unit is altered. A pathologic perfusion of the cognitive cortex during the 1st postnatal week is associated with cognitive morbidity in the long term.

In late-onset IUGR that concerns 70–80% of cases, the umbilical artery Doppler may be normal, but in cases of brain sparing there is evidence of abnormal neurobehaviour.

Aim: To investigate NIRS as a potential prognostic indicator of cognitive dysfunction in late-onset IUGR neonates.

Subjects/Methods: We studied prospectively 15 late-onset IUGR preterms with normal umbilical artery Dopplers (Group B) in comparison with 27 AGA control peers (Group A). All subjects had normal brain ultrasound. Exclusion criteria were the normal SGA status, perinatal asphyxia and major congenital anomalies.

Neonates were recorded on the 1st, 3rd and 5th postnatal day using the NIRO-200 system to evaluate the Tissue Oxygenation Index (TOI) and the normalized Tissue Hemoglobin Index (nTHI). Brain ultrasound, mean arterial pressure, hematocrit, blood glucose, oxygenation and aeration indexes were verified within normal levels before each record. Statistical analysis was performed with SPSS 17.0 using Mann-Wittney and One-way ANOVA test.

Results: Median gestational age (±SD) was 31,9±1.05 weeks for Group A and 31,8±2.9 weeks for Group B, while median BW was 1737±285gr and 1185±380gr respectively. TOI was significantly reduced on the 1st and 5th day of life in the IUGR group while THI presented no statistically significant difference (Table 1).

Conclusions: NIRS data reveals a decreased cortical oxygenation in late-onset IUGR neonates during the early postnatal period. Larger subject groups are required in order to propose NIRS as a prognostic tool of potential cognitive impairments. Table 1: Tissue oxygenation index (TOI) and tissue hemoglobin index (THI) of each measurement between IUGR and AGA control subjects.