

Pre-BT ACA peak systolic (0.37 m/s) and mean velocity (0.19 m/s) decreased significantly post-BT (0.32 and 0.16 respectively; $p < 0.01$). There was no significant change in RI ($p = 0.57$) and PI ($p = 0.53$) in the ACA and SVC flow ($p = 0.16$) post-BT.

The cerebral HbO₂ increased significantly (mean difference 12.53 μ M; $p < 0.001$) post-BT. The pre-BT mean cerebral tissue oxygenation index (TOI) (66.5%) increased significantly post-BT (73.6%; $p < 0.001$).

Conclusion The cerebral blood flow velocity decreased but there was no change in SVC flow volume; cerebral tissue oxygenation improved following BT during the 2nd to 4th week of life in preterm infants.

REFERENCE

1 Banerjee J et al. PAS conference May 2014

PO-0486 CEREBRAL HAEMODYNAMIC RESPONSE TO BLOOD TRANSFUSION VARIES WITH CHRONOLOGICAL AGE IN PRETERM INFANTS

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Background and aims We have shown that cerebral blood flow decreases following blood transfusion (BT) in extreme preterm infants during the first week of life.¹

Aim To investigate the cerebral blood flow changes following BT in relation to the chronological age of preterm infants.

Methods Preterm infants who received BT during the first 10 weeks of life were included. Pre and post-BT Anterior Cerebral artery (ACA) mean velocity, resistance index (RI) and pulsatility index (PI), and Superior Vena Cava (SVC) flow were measured using Doppler USS. Pre and post BT measurements were compared by paired t-test using SPSS 22.0.

Results 59 BT events were studied, 20 received BT during 1st week (Group 1), 21 during the 2nd to 4th week (Group 2) and 18 during >4th week (Group 3) of age. The median age (range) at BT was 5 (1–7), 14 (8–27) and 45 (29–68) days for group 1, 2 and 3 respectively. In all 3 groups the pre-BT ACA mean velocity decreased significantly post-BT ($p < 0.03$) and there was no significant change in RI and PI in the ACA. The pre-BT mean SVC flow decreased significantly post-BT in Group 1 and Group 3 ($p = 0.03$ and <0.001 respectively), but this was not significant in the Group 2 infants ($p = 0.16$).

Conclusion The effect of BT on cerebral haemodynamics was more prominent during the first week and after 4th week of age in preterm infants.

REFERENCE

1 Banerjee J et al. PAS Conference May 2014

PO-0487 CONSTRAINING THE NEED FOR LIGATING A SIGNIFICANT PATENT DUCTUS ARTERIOSUS AFTER IBUPROFEN THERAPY IN PRETERMS. A RETROSPECTIVE ANALYSIS FROM 10/2009–12/2013

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Background and aim The need for ligation of a patent ductus arteriosus with a haemodynamically significant left to right shunt (hPDA) on echocardiography remains controversial. Aim was to determine echocardiographic and clinical differences of preterms with hPDA after ibuprofen therapy who underwent ligation and those who had no further intervention.

Methods Echocardiographic and clinical parameters of preterms with hPDA (< 30 weeks of gestation) were retrieved for the “ligation group” before surgical ligation and for the “non-ligation group” after the last ibuprofen cycle. Recruitment criteria for hPDA were an enddiastolic maximal velocity of the left pulmonary artery (LPAdia) $\geq 0,2$ m/s and/or a ratio of the left atrium/aorta (LA/Ao-ratio) $\geq 1,4$. Preterms who died before ligation/ductal closure were excluded.

Results In 53 of 461 preterms a hPDA was still present after ibuprofen. Thirty-nine preterms were included to the “ligation-group”, 14 to the “non-ligation group”. Significant differences were detected for diastolic and systolic blood pressure, LPAdia, LA/Ao-ratio, stroke volume, backward flow in the aorta abdominalis and the period until total enteral nutrition. Further differences were detected in airway support, hPDA flow patterns, gestational age, intraventricular haemorrhage and necrotising enterocolitis before and after ductal closure.

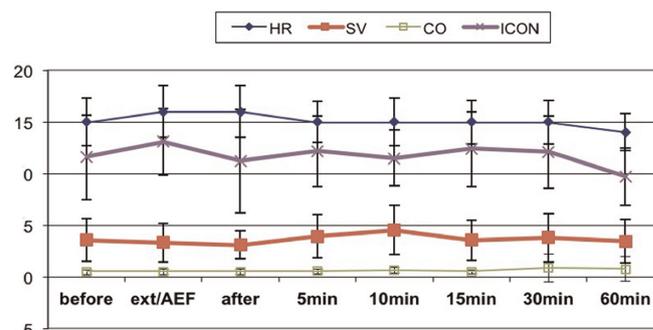
Conclusions The hPDA of the “ligation-group” was haemodynamically more relevant and preterms were more morbid than in the “non-ligation group”. The observed differences reflect our policy of constraining the need for ligating a hPDA on echocardiography to selective ligation subject to both the severity of echocardiographic findings and the hPDA’s clinical impact.

PO-0488 NON-INVASIVE HAEMODYNAMIC MONITORING USING ELECTRICAL CARDIOMETRY IN NEONATES DURING RESPIRATORY PROCEDURES

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Background Electrical cardiometry (EC: Osypka Medical, Berlin, Germany and La Jolla, California, USA) is a new non-invasive technique for haemodynamic monitoring of neonates. No data are available for preterm babies during respiratory procedures, such as elective extubation or chest physiotherapy. We designed this study to clarify if these procedures have any haemodynamic consequences.



Abstract PO-0488 Figure 1

Methods We assessed stroke volume (SV), cardiac output (CO), contractility index (ICON) and heart rate (HR) with EC before and after 5, 10, 15, 30 and 60 min from elective extubation or physiotherapy sessions with accelerated expiratory flow [Demont B *et al*, *Physiotherapy* 2007;93:12–16]. Functional echocardiography has been performed by the same operator before and after 60 min from the above-described respiratory procedures. Infants with congenital heart disease were not eligible.

Results Eleven (for physiotherapy) and thirteen (for extubation) preterm infants were enrolled. Gestational age and birth weight were 29.2 ± 0.5 wks and 1313 ± 915 g, respectively.

Fig.1 shows trends of SV, CO, ICON and HR before and after the procedures: no differences were noticed ($p = 0.318$ for SV; $p = 0.559$ for CO; $p = 0.23$ for ICON; $p = 0.78$ for HR, Friedman test).

No differences were found analysing separately extubation and physiotherapy groups.

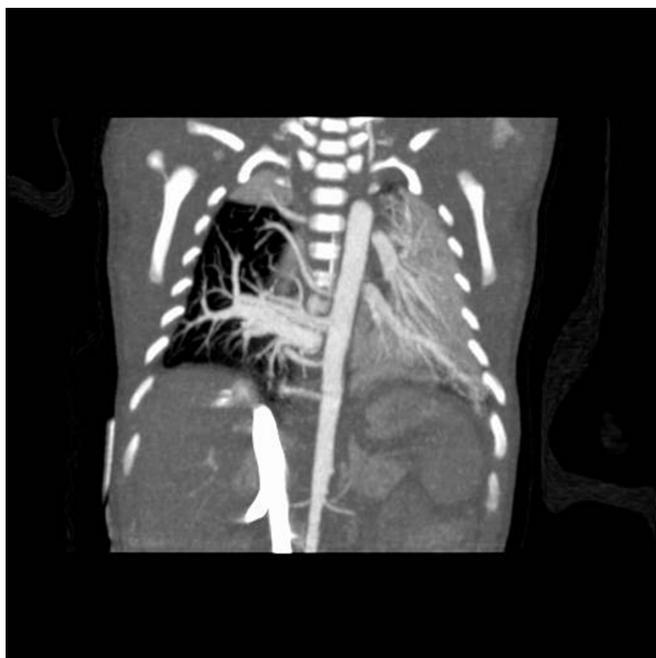
Conclusions No haemodynamic changes are visible during elective extubation or chest physiotherapy in preterm infants. These preliminary results deserve further evaluation studying cerebral oxygenation with NIRS.

PO-0489 A REFRACTORY HYPOXEMIA WORSENER BY NO ADMINISTRATION: IT WAS A VOLUMINOUS PULMONARY SEQUESTRATION WITH ASYMETRIC PULMONARY ARTERIES AND MAJOR UNILATERAL PULMONARY OUTPUT

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We report the case of a 18 days of life newborn who presented, after a normal pregnancy and first days, an acute respiratory



Abstract PO-0489 Figure 1

distress. He need to be intubated, to receive sedative drugs, and to be transferred in a paediatric intensive care unit.

In this unit, because of the intense hypoxemia, inhaled nitric oxide (NO) was administered, concomitantly with ventilation with 100% of oxygen. We can note a real worsening after NO administration and particularly his chest radiography was really asymmetric, with an aspect of right pulmonary hypoperfusion and left pulmonary oedema.

An echocardiography was performed, and the important elements were: supra-systemic pulmonary hypertension, asymmetric pulmonary arteries (PA) with hypoplastic right PA and dilated left PA, moreover we could see that left atrium received the pulmonary veins but with one hypoplastic and others dilated, with acceleration of 2 m/sec and suspicion of stenosis of pulmonary veins. Atrial septal defect was shunting right to left.

A CT-scan completed the investigations and gave the precise diagnosis: this baby suffered from an intra-lobar sequestration concerning all right superior and medium lobes, with 6 systemic collateral arteries, responsible for the pulmonary hypertension and the increased cardiac output.

The therapeutic decision was to stop NO, administer diuretics, and to embolize during a catheterization 4 of the 6 systemic arteries. The evolution after was good, even if the baby suffered from persistent pulmonary hypertension after procedure. The extubation was possible six days after procedure.

PO-0490 ECHOCARDIOGRAPHIC PREDICTORS OF OUTCOME IN PERSISTENT PULMONARY HYPERTENSION IN NEWBORN (PPHN): A PROSPECTIVE STUDY

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Aim To evaluate prospectively the echocardiographic predictors of outcome in persistent pulmonary hypertension of the newborn (PPHN).

Patients and methods We realised a prospective, monocentric study from April 2012 to April 2013 in a paediatric intensive care unit. Were enrolled newborns who were less of 28 days of life, born at term or preterm, with clinical and echocardiographic signs of pulmonary hypertension. Were excluded patients with congenital heart disease.

Two echocardiographies were performed by a trained intensivist, first at the diagnostic of PPHN, second after therapeutic optimisation. Were measured : sense of the septal curve, evaluation of systolic pulmonary pressure on tricuspid regurgitation, presence and direction of ductal and atrial shunts, right and left ventricular function (with maximal aortic and pulmonary velocity and visual aspect of dilatation of right atrium and ventricle).

Results 27 newborns (median age 0 day: 0–15 days of life) were enrolled. Six died (22%). At the first echocardiography, we find that the newborn who died presented more frequently a right to left ductal shunt (83% vs. 28%, $p = 0.043$), a dilated right atrium (83% vs. 33%, $p = 0.043$) and a smallest maximal velocity in pulmonary artery (0,53 m/s vs. 0,64 m/s, non significative) than those who survived. The direction of the atrial shunt were not in correlation with death. Second echocardiography showed that the diminution of the measured pulmonary pressures isn't a good sign of predictive good outcome.

Conclusion We have to confirm in largest studies that echocardiography can be used to estimate prognosis in PPHN.