

### 1125 EFFICACY OF AN INDIVIDUALIZED STRATEGY FOR THE PHARMACOLOGICAL CLOSURE OF PDA WITH IBUPROFEN IN PRETERM INFANTS: EVALUATION BY ECHOCARDIOGRAPHY

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**Background and Aims** The aim of study is to evaluate the applicability of an individualized strategy for closure of PDA in preterms. We verified the closure rate and consequently the failure of PDA closure, the rate of reopening and the onset of secondary outcomes.

**Methods** We recruited 36 preterms (27 weeks mean GA; mean birth weight 828 g) with PDA and candidates for the pharmacological closure according to the internal protocol.

Using serial ECHOS, we evaluated the persistence of the PDA after the administration of a first dose of ibuprofen, establishing the need to repeat a second or third dose each 24 hours.

**Results** We observed a rate of complete closure of 77.7% (33.3% after the first dose, 30.5% after the second and 13.8% after the third dose).

The incidence of re-opening is 16.6%, without significant difference related to the number of doses ( $p=1$ ).

There was a significant difference in terms of birth weight and GA between patients with persistent PDA (mean BW 485 g and mean GA 24+3) and patients who kept the ductus closed (mean BW 901.4 g and GA 27) ( $p<0.05$ ).

There was no significant difference in terms of incidence of outcomes (IVH, NEC, bronchodysplasia, deaths) comparing to a group which received a standard treatment of 3 doses.

**Conclusion** The individualized strategy allows to expose preterms to a minor amount of doses, without changing the number of closure and outcomes.

However, the extreme GA are associated with an increased risk of failure of closure and reopening.

### 1126 VITAMIN D LEVELS AND MYOCARDIAL FUNCTION IN PRETERM INFANTS

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**Background** Low Vitamin D levels have been linked to cardiac failure in the adults and children. Tissue Doppler Imaging (TDI) is evolving as a superior measure of subtle changes in myocardial contractility in preterm infants. We aimed to correlate Vitamin D levels at birth with TDI measures of systolic and diastolic function.

**Methods** Preterm infants < 32 weeks gestation were recruited. Vitamin D levels were measured at birth and echocardiography was carried out on Day 1. TDI myocardial velocities were recorded using a pulsed wave doppler sample from the lateral left/right ventricular wall & intraventricular septum. Peak systolic (S'), early diastolic (E') and late diastolic (A') velocities were recorded.

**Results** Ten preterm infants with structurally normal hearts were recruited. Mean (SD) gestational age was 28 (1.7) weeks and birth-weight 1.29 (0.3)kg. There was no significant increase in Right ventricular systolic (5.1cm/sec vs 4.8cm/sec) or diastolic myocardial velocity measures (5.2cm/sec vs 5.1cm/sec) or left myocardial velocity systolic (3.7cm/sec vs 3.9cm/sec) or diastolic (4.1cm/sec vs 4.0cm/sec) measures between those with severe Vitamin D deficiency (<30 nmol/L) and those with low normal levels of Vitamin D.

**Conclusion** Neonates with severe Vitamin D deficiency have similar TDI measures of systolic and diastolic velocity to those with near normal levels. In our small cohort severe Vitamin D deficiency appears to cause no impairment in myocardial contractility.

### 1127 MEASURING BLOOD PRESSURE AND MANAGING "HYPOTENSION" IN NEWBORN BABIES: VARIATION IN PRACTICES

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**Background and Aims** Measuring blood pressure (BP) is an important part of cardiovascular assessment in newborns. Although arterial BP is considered as a gold standard, various methods of non-invasive BP measurements are used in clinical practice. The various studies have shown that BP measured by Doppler is better correlated with arterial BP than the oscillometric method. Regardless of definition of "hypotension", there is no agreement on its management strategies.

**The Aim** of this study is to survey the variations in practices in all tertiary neonatal units across England in management of hypotension.

**Methods** A structured questionnaire based telephonic survey.

**Results** The response rate was 100% (45 units surveyed). Forty units (89%) use arterial BP and/or oscillometric method, and only 5 units (11%) use Doppler method. Twenty seven units (60%) have written guidelines on management of hypotension. Forty (90%) units use fluid bolus as the first line management; two units use fresh frozen plasma if the perfusion remains low. Thirty seven units (82%) use dopamine as the first line inotropic agent. Twenty units (45%) keep the umbilical arterial lines for as long as needed but the others keep them for different periods (3–14 days).

There are 9 different makes of oscillometric monitors used, and 10% of the units use different makes in one intensive care area.

**Conclusion** Marked variation remains in management of hypotension in newborn babies. There is a need to formulate evidence based guidelines for management of hypotension and to study the accuracy of non-invasive methods of BP measurement.

### 1128 EVALUATION OF ORAL PROSTAGLANDIN E1 IN MANAGEMENT OF DUCTUS DEPENDENT CONGENITAL HEART DISEASE

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**Introduction** Intravenous prostaglandin E1 (PGE1) infusion is a treatment which effect is proven in ductus dependent congenital heart disease. However, PGE1 is very expensive, needed continuous infusion and its supply is difficult by every center. When its long term use is necessary, these problems become more important.

**Aim** To show whether oral PGE1 could keep the ductus open or not till the supply of intravenous PGE1.

**Method** Ten patients, who were admitted to newborn intensive care unit with the diagnosis of ductus dependent congenital heart disease and received oral PGE1 till the supply of intravenous PGE1, were evaluated.

**Results** It was observed that the PO2 and SO2 levels of patients measured 2 hours after the initiation of oral PGE1 were significantly increased compared to the levels before initiation of PGE1 ( $p<0.05$ ). It was also observed that the PO2 and SO2 levels of patients

measured 2 hours after the initiation of intravenous PGE1 were slightly increased compared to levels before initiation of intravenous PGE1 ( $p < 0.05$ ).

**Discussion** Although intravenous PGE1 is more effective than oral PGE1 in short term usage, oral PGE1 is also sufficiently effective in keeping the ductus open. For this reason until the intravenous PGE1 is supplied oral PGE1 may be used as an alternative treatment choice. We think that in long term use oral PGE1, which is cheaper and easy to use, could be used instead of intravenous PGE1 without need of admission to hospital and opening intravenous line.

#### 1129 SURGICAL TREATMENT OF PATENT DUCTUS ARTERIOSUS IN PRETERM INFANTS. TEN-YEAR EXPERIENCE WITH LIGATION IN THE NEWBORN INTENSIVE CARE UNIT

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**Background and Aim of study** Frequently in low-birth-weight infants, ductus arteriosus fails to close spontaneously. This study evaluates the results of surgical ligation of symptomatic PDA in low birth weights preterms.

**Methods** We reviewed the medical records of all infants undergoing surgical closure of PDA from 2000 to 2010. Demographic data, weight at operation, respiratory assistance pre-operative, surgical technique to close PDA and outcome were analyzed.

**Results** Thirty infants underwent surgical closure of PDA in which either indomethacin or ibuprofen treatment had failed or was contraindicated. The mean GA was 27 and the mean birth weight was 752 g. The average weight at operation was 790.5 g. PDA was surgically closed by left thoracotomy using hemoclips.

Postoperative complication occurred in 4 patients, which included intraoperative bleeding (1), pneumothorax (1), lymphatic leak (2). No vocal cord paralysis nor diaphragmatic paralysis were observed. We also registered outcomes related to PDA: bronchodysplasia (22), IVH(8), NEC(8), ROP(13). There was no mortality related to surgery.

**Conclusion** We conclude that surgical closure of hemodynamically significant PDA is safe and effective in preterm low birth weights infants when pharmacological treatment is ineffective or contraindicated. The associated morbidity is minimal and no surgery-related mortality was observed.

#### 1130 EVALUATION OF THE NEONATES WITH CYANOTIC CONGENITAL HEART DEFECTS HOSPITALIZED IN A NICU AT SIX YEARS PERIOD

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Severe congenital heart defects might be symptom free in first days of life. Therefore only half of the congenital heart defects were diagnosed in neonatal period.

In six years period, 86 neonates with the diagnosis of cyanotic congenital heart defects out of 3672 neonates hospitalized in our unit were evaluated. Neonates with the diagnosis of Down syndrome, trisomies and major congenital defects other than heart were excluded from the evaluation. Mean gestational weeks and birth weights of the neonates were 39, 3 (35–40) week and 3128 (1770–4470) gr respectively. The most common pathology of the heart defects was transposition of great arteries (TGA) in 31 neonates (%36) and the second common pathology was pulmonary atresia in 17 neonates (%19, 8). Four of the 31 neonates with TGA had arterial switch operation and four of them had septostomy procedure, while 23 did not need any invasive procedure. Fourteen of 17

neonates with pulmonary atresia had central or peripheral shunt operations. 51, 2% of the neonates were discharged while 12.8% of them were discharged due to request of the family. Three of the neonates who had arterial switch operation and 11 neonates who had shunt operation were discharged.

Early recognition of infants with congenital heart disease that has high mortality and morbidity in neonatal period and implementation of early intervention in patients with ductus-dependent heart defects was considered to have a positive effect on prognosis.

#### 1131 CARDIOVASCULAR AND HORMONAL RESPONSES TO HYPOXIC STRESS IN THE PRETERM PIGLET

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**Background and Aims** Immature control of the cardiovascular system may be a contributing factor to poor cardiovascular function and associated increases in mortality and morbidity in preterm infants. This study aimed to assess cardiovascular and hormonal responses to a mild hypoxic stress in newborn piglets.

**Methods** Piglets were delivered by C-section at 97 and 113 days of gestation (term≈115d). An additional preterm group was exposed to maternal glucocorticoid treatment. Changes in mean arterial blood pressure (MAP), skin blood flow and plasma concentrations of adrenalin, noradrenalin, angiotensin II and cortisol were measured in response to acute hypoxia (4% O<sub>2</sub> for 20min).

**Results** Preterm piglets were less likely to exhibit a mature cardiovascular compensatory response to hypoxia (increased MAP and reduced skin blood flow) than term piglets. Plasma adrenalin and noradrenalin concentrations at the end of hypoxia were increased in all groups and were 2–3 fold higher in preterm pigs than in term pigs ( $P < 0.05$ ). Plasma cortisol levels were increased at the end of hypoxia in term piglets ( $P < 0.05$ ) but not in preterm or glucocorticoid exposed preterm piglets. Angiotensin II levels were reduced in glucocorticoid exposed preterm piglets compared to untreated preterm piglets ( $P < 0.05$ ).

**Conclusions** The reduced cardiovascular compensatory response to hypoxia in preterm pigs is not the result of reduced plasma levels of catecholamines during hypoxia. Low levels of angiotensin II in glucocorticoid exposed preterm piglets may contribute to poor control of skin blood flow during hypoxia.

#### 1132 THE EFFECT OF PLATELET COUNT ON SUCCESSFUL MEDICAL CLOSURE OF PATENT DUCTUS ARTERIOSUS

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**Background and Aim** Patent Ductus Arteriosus (PDA) is a shunt vessel connecting the pulmonary artery and the aorta. It usually closes after birth, but persistence of PDA in preterm neonates is a major cause of morbidity and mortality. A recent study suggested that platelet counts are likely to contribute to PDA closure in humans.

We aim to investigate relationship between platelet counts and closure of PDA after medical treatment with Indomethacin or I buprofen.

**Methods** All preterm infants born  $\leq 32$  weeks and birth weight  $\leq 1500$  grams born between 01 January 2008 and 31 December 2010 were included. Retrospective data was collected from the case records, SEND neonatal database and laboratory result systems.