in 4 children. Only one echocardiogram was abnormal in a child in whom cardiomegaly was due to a small pericardial effusion that resolved spontaneously in a few weeks time. It is likely that this effusion was secondary to an underlying viral illness.

Conclusion Incidental finding of an abnormal cardiac silhouette on a CXR in children with no underlying cardiac symptoms or signs is not associated with an underlying structural or functional heart disease.

G253(P) THE RISK OF DEVELOPING NECROTISING ENTEROCOLITIS IN INFANTS WITH CONGENITAL HEART DISEASE UNDERGOING INVASIVE CARDIAC PROCEDURES

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Aim Prematurity is the most significant risk factor for developing necrotising enterocolitis (NEC). However, congenital heart disease (CHD) is also a well-recognised risk factor. Our aim was to identify the incidence of NEC in term children undergoing invasive cardiac procedures.

Methods This was 5 year (January 2010 to December 2015) retrospective review of all infants admitted with CHD. Data was collected on demographics, NEC (incidence, clinical management and mortality) and invasive cardiac procedure (ICaP) defined as either open-heart surgery or cardiac catheterisation. Incidence of NEC was compared in the two groups (ICaP and non-ICaP). Institutional ethical approval was given. p value <0.05 was significant.

Result 5103 infants with CHD were identified. 31.5% ($n=1608$) patients had an ICaP. Overall 128/5103 (2.5%) of patients developed NEC: 102/1608 in ICaP group; 26/3495 in non ICaP group, $p<0.001$. Median gestational age was 37 weeks (range 29 to 42). Median age at presentation was 6 weeks (range 0.4 to 104). The most common cardiac diagnoses were, hypoplastic left heart 45 (33.5%), ventricular septal defect (VSD) 16 (12%), isolated PDA 10 (7.4%). 60 had multiple cardiac procedures and 42 had a single cardiac procedure, $p>0.5$.

52% ($n=66$) of patients had pneumatosis and 7% ($n=9$) had pneumoperitoneum. 79% ($n=101$) of patients were managed conservatively. 21% (27/128) required surgery: 18/27 (67%) in ICaP and 9/27 in non-ICaP group, $p>0.5$. Multiple cardiac procedures significantly increased the risk of needing a laparotomy, $p=0.01$. Intraoperatively, 44% ($n=12$) had a bowel perforation and rest had significant NEC. 41% ($n=11$) had primary resection and anastomosis; 16/27 had a stoma. Overall mortality was 7%: 5 patients died pre-operatively and 4 patients died post-operatively, however an ICaP was not a significant factor for mortality in NEC ($p>0.5$).

Conclusion Invasive cardiac procedure is a significant factor in developing NEC in term infants. A single ICaP did not increase the risk for either needing laparotomy or mortality, but multiple cardiac procedures did further increased the risk for laparotomy in children with NEC. This information could be used for counselling and risk stratifying cardiac patients.

G254(P) CHANGING PATTERN OF NEONATAL PDA LIGATION ACROSS A NETWORK

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Introduction The management of the neonatal patent ductus arteriosus (PDA) remains controversial and subject to much debate. There is uncertainty about the type and timing of medical therapies. There are concerns about the long-term outcome after surgical ligation. Previous studies from our network suggested improved survival.¹ Subsequent work highlighted different referrals practices by the tertiary neonatal intensive care units (NICUs). The aim of this service evaluation was to review changing practice across this network over the last 18 years following a more standardised network approach of referral since 2013.

Methods Patients were identified from the Acute Neonatal Transport Service (ANTS) database. All infants requiring PDA ligation were transported by them to cardiac centres for surgical ligation between January 2004 and July 2017.

Results Over this period 252 neonates have been referred for PDA ligation. The numbers referred annually were a median of 15 (range 5–36), with a peak of 36 referrals in 2011. Most referrals (77%) were from the three tertiary NICUs. Prior to 2011 there was a clear difference in referral rates.

Conclusions A more standardised approach, where usually only infants who had failed extubation were referred for PDA ligation has resulted in a substantial reduction in the number of infants undergoing surgical closure. This reduction is not the result of a changing neonatal population nor a change in specific medical therapies to treat the PDA in any of the units. It almost certainly reflects more tolerance of a PDA alongside careful ventilation, fluid, and nutrition management.

REFERENCE

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G255(P) AORTIC AND PULMONARY ARTERY CALCIFICATION IN TWIN-TO-TWIN TRANSFUSION SYNDROME

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Introduction Twin-to-twin transfusion syndrome (TTTS) is a rare disorder occurring as a result of communicating vascular anastomosis between the circulations of one twin with that of the other. Cardiac findings in this condition may include ventricular hypertrophy, pulmonary stenosis, tricuspid regurgitation, congestive cardiac failure, left ventricle hypoplasia with hypokinesia, and sub-aortic obstruction seen in the recipient twin. Isolated great artery calcification; aortic and pulmonary artery calcification is one such uncommon condition associated with TTTS. It may cause severe systemic hypertension and

cardiomyopathy. We report a case of aortic and pulmonary artery calcification in association with TTTS

Case report The twins were born at 34⁺4 weeks of gestation by elective caesarean in good condition. There was an antenatal diagnosis of TTTS, treated with laser ablation of the recipient twin (Twin 1). Twin 1 had an antenatal diagnosis of pulmonary stenosis and pericardial effusion.

Echocardiogram done postnatally in the first day of life showed a structurally normal heart with pericardial effusion. The aortic valve was bicuspid with an echogenic post aortic valve stenosis and the ascending aorta. Pulmonary valve was echogenic with a clear post pulmonary valve stenosis a post stenotic dilatation. The pulmonary arteries looked small bilaterally with a flow velocity of approximately 1.7 m/sec. Serial echocardiogram in the neonatal unit showed no increase in the velocity across the great vessels. Serum calcium levels were within normal limits. An abdominal ultrasound showed no evidence of calcification or stenosis of renal arteries or the splanchnic circulation.

Baby was closely monitored on the neonatal unit and was discharged on day 21 of life with a good weight gain and follow up with the cardiologists.

Conclusion Calcification of the great vessels is an uncommon finding in TTTS and is thought to be secondary to the excessive volume overload in the recipient twin. Antenatal ultrasonography is useful in identifying hyperechogenicity of vessel walls. Serial monitoring during pregnancy and postnatal life is imperative to reduce morbidity and mortality associated with this syndrome.

International Child Health Group

G256

VALIDATION OF TRANSCUTANEOUS BILIRUBINOMETRY AS A METHOD TO MONITOR NEWBORN JAUNDICE IN A LOW INCOME COUNTRY

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Background and aims Kernicterus is a significant problem in low income countries (LICs) and measurement of total serum bilirubin (TSB) is often restricted by cost or lack of laboratory facilities. Near patient testing through the use of transcutaneous bilirubinometry (TcB) may be of benefit in LICs. Therefore, the aim of this study was to determine agreement between (TcB) and TSB in a LIC (Haiti).

Methods With approval the Ministry of Health, we conducted a single centre prospective study (February-May 2017) in a NGO funded neonatal unit in northern Haiti. Babies with clinically detected jaundice, <7 days of age were eligible for inclusion. To enable serial TcB measurements during phototherapy, a strip of black tape was placed across the babies' sternum. Once clinical jaundice was detected, a parallel TcB measurement using a TcB bilirubinometer (JM-103) and a blood TSB sample for laboratory testing were obtained. Further management was initiated based upon the UK NICE threshold bilirubin values. A Bland-Altman difference plot was used to measure agreement between TcB and TSB.

Results Paired TcB/TSB measurements were obtained from 35 infants. 19 (54.3%) were male; 23 (65.7%) were ≥35 weeks,

12 (34.3%) <35 weeks gestation. All babies were ≤5 days old and 32 (91.4%) were receiving phototherapy. A Bland-Altman plot of TcB versus TSB demonstrated good agreement between the methods with only one TcB/TSB pair falling outside of the mean difference 95% confidence (CI) interval (Bland-Altman plot available). Overall, TcB tended to overestimate bilirubin in comparison to TSB [mean difference 11.1 μmol/L (95% CI -10.2, 32.5)]. However, at higher bilirubin levels (>200 μmol/L), TcB tended to underestimate bilirubin in comparison to TSB and the magnitude of the difference increased. The mean difference between TcB and TSB was increased in babies <35 weeks [16.4 μmol/L (95% CI: 24.8 to 57.5)] compared to babies >35 weeks 8.4 μmol/L (95% CI -18.5, 35.3).

Conclusion Our data indicate good agreement between TcB and TSB levels in Haitian newborns receiving phototherapy. Implementing TcB measurement for the management of newborn jaundice is both feasible and convenient as an alternative to laboratory TSB measurements in preterm and term babies during phototherapy in a LIC setting.

G257

EVALUATION OF 'TRY' AN ALGORITHM FOR NEONATAL CPAP IN LOW-INCOME SETTINGS

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Background Non-invasive respiratory support using bubble continuous positive airway pressure (bCPAP) is useful in treating babies with respiratory distress syndrome. Despite its proven clinical and cost effectiveness, implementation is hampered by inappropriate administration of bCPAP in low-resource settings. A clinical algorithm – 'TRY' (based on Tone: good, Respiratory distress: Yes: heart rate above 100 beats/min) has been developed to correctly identify which newborns would benefit from bCPAP in a teaching hospital in Malawi.

Objective To evaluate the reliability, sensitivity and specificity of TRY when employed by nurses in a Malawian district hospital.

Methods Nursing staff in a Malawian district hospital neonatal unit were asked, over a 2 month period, to complete TRY assessments for every newly admitted baby with the inclusion criteria: clinical evidence of respiratory distress and/or birth weight less than 1.3 kg. A visiting paediatrician, blinded to the nurses' assessments, concurrently assessed each baby providing both a TRY assessment and a clinical decision regarding the need for CPAP administration. Interrater reliability was calculated comparing nursing and paediatrician TRY assessment outcomes. Sensitivity and specificity were estimated comparing nurse TRY assessments against the paediatrician's clinical decision.

Results 287 infants were admitted during the study period; 145 (51%) met the inclusion criteria and of these, 57 (39%) received joint assessments. The inter-rater reliability was high, (kappa(κ) 0.822). Sensitivity and specificity were 92% and 96% respectively.

Conclusions District hospital nurses, using the TRY-CPAP algorithm, reliably identify babies that might benefit from bCPAP and thus improve its effective implementation.