Background and aims The adaptive changes of the fetal heart in fetal growth restriction (FGR) could persist into childhood and be responsible for the increased cardiovascular mortality rate in adulthood. The aim of the study was to assess cardiac morphology and function in newborns with FGR.
Methods FGR was defined as a birth weight centile ≤ 10. Prospective study of 50 neonates, 25 with FGR and 25 with normal intrauterine growth and weight at birth (Table 1). Comprehensive echocardiographic study was performed assessing cardiac morphology, systolic and diastolic function.
Results Compared with controls, neonates with FGR had more globular cardiac ventricles (Table 1), lower systolic excursions of the tricuspid and mitral valvular plane and lower values of the s' in the lateral and septal mitral annulus in the tissue Doppler imaging (TDI) study (p < 0,05). The e' at the tricuspid, lateral and septal mitral annulus together with the E wave of tricuspid inflow were significantly reduced in the FGR group; and tricuspid deceleration time showed a trend to increase without reaching statistical significance.
Conclusions Newborns with FGR manifest cardiac shape changes, reduced systolic values of the TDI at the left heart and lower values of diastolic function more pronounced at the right heart compared with neonates with normal intrauterine growth.

PS-021 ELECTRICAL CARDIOMETRY STROKE VOLUME EVALUATION IN NICU: COMPARISON WITH FUNCTIONAL ECHOCARDIOGRAPHY

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Background Evaluation of cardiac output in neonates might be difficult because of the complexity and risks of invasive classical procedures. New systems like electrical cardiometry (EC: Osypka Medical, Berlin, Germany and La Jolla, California, USA) have been proposed but few data are available in neonates. We investigated stroke volume (SV) using EC in term and preterm infants.
Methods Eligible patients were neonates admitted to the NICU and undergoing echocardiography for any clinical reasons, without congenital heart disease. We measured SV with EC and echocardiography, within 10 min. Measurements were repeated 6 times by the same operator to calculate repeatability before and after echocardiography. Data have been compared with correlation and Bland-Altman analysis.
Results 59 neonates were enrolled, allowing 150 paired measurements. Mean gestational age and birth weight were 33.9 ± 3.4 wks and 1988 ± 823 g, respectively.
Results of Pearson correlation and Bland-Altman analysis for the whole population were (r = 0.611; p < 0.001) and (mean error [echo-EC] -1.35 mL [95% CI: -6.55 mL ± 3.85 ml]), respectively.

Correlation is maintained even with PDA (r = 0.627; p < 0.001).

Gestational age seems to do not influence the correlation between EC and echo (Partial correlation coefficient r = 0.36; p < 0.0001).

Repeatability (coefficient of variation) was 46% for EC and 52% for echocardiography. There was no difference in SV measured by EC after 10 min (3.76 ± SD vs 3.78 ± SD; p = 0.56, Wilcoxon test).
Conclusions EC is feasible, reproducible and quick. It could be an useful tool for continuous monitoring and haemodynamic evaluation in neonates. EC is particularly interesting for the clinical management of preterm neonates.

PS-022 WITHDRAWN

Congenital Heart Disease

PS-023 THE PREVALENCE AND SPONTANEOUS CLOSURE RATE OF ISOLATED VENTRICULAR SEPTAL DEFECT IN NEWBORNS BY ECHOCARDIOGRAPHIC SCREENING

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Aims Evaluation of the prevalence and spontaneous closure rate of the most common congenital heart defect (CHD) – the ventricular septal defect (VSD) – in one maternity clinic, using colour flow Doppler echocardiographic screening (ECHO).
Methods Over a period of 7 years ECHO was offered to all babies who were born at the Marien hospital in Darmstadt. An experienced paediatric cardiologist performed the ECHO using a 10 MHz transducer within the first 72 h of neonatal life. The prevalence of different types of VSD and their outcome were evaluated.
Results 8082 neonates were screened. 399 cases (49/1000) of CHD were detected by ECHO. VSD was found in 320 neonates (40/1000) (137 male, 183 female): 4 perimembranous, 24 multiple and 292 muscular VSD. 2 major, 16 hemodynamically significant and 304 minor VSD. 46 had a typical murmur (14%), 274 were without clinical sign (including 1 major VSD). In the follow-up (3 month to 6,7 years) 280 could be included: the 2 major VSD had to be closed interventionally and surgically within the first year of life. The spontaneous closure rate was 89% after 0,2–4,5 years (average 0,6) (hemodynamically significant: 50%, minor VSD: 93%). All VSD without spontaneous closure after 1 year (22 cases) had a typical murmur.
Conclusions The prevalence of VSD is considerably high in neonates when ECHO is performed. There are slightly more female neonates with this diagnosis. The spontaneous closure rate is high regarding minor VSD. Auscultation is insufficient to diagnose VSD in neonatal period but is excellent in the follow-up to detect VSD without spontaneous closure.

PS-024 NEURODEVELOPMENTAL EXAMINATION BY BAYLEY SCALE OF INFANT DEVELOPMENT-II IN CHILDREN WITH CYANOTIC CONGENITAL HEART DISEASE

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Background and aims The aim of the study was to make the neurodevelopmental evaluation of the children with cyanotic congenital heart disease.
Methods Children between the age of six to fourty-two months were included in the study and were evaluated in three groups

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