

Aim To determine influence of oxygen support on diameter and flow rate through the pulmonary artery in preterm infants by echocardiography.

Methods The study was conducted in tertiary health institution (Pediatric Clinic, KCU Sarajevo), the Neonatal intensive care unit between November 2011th and February 2012th. Examinees were divided into three groups, depending on the type of oxygen support: infants on conventional mechanical ventilation, CPAP by continuous positive pressure and indirect oxygen. It was performed echocardiography measuring of pulmonary artery dimensions and the maximum flow rate. Standard echocardiography methods were used: One-dimensional M mode and Two-dimensional Doppler.

Results 30 patients age < 35 weeks were divided into three groups. Mean body weight was 1066 ± 150.5 g; 1280 ± 115.95 g and 2720 ± 420.92 g.

Mean gestational age is: 28.7 ± 1.78 ; 30.3 ± 0.95 and 33.90 ± 0.99 .

The mean diameter of the main branch of the pulmonary artery is: 5.64 ± 0.6 ; 6.16 ± 0.37 and $8.5 \text{ mm} \pm 1.06$.

The mean maximum flow rate through the main branch of the pulmonary artery (m/s): 1.48 ± 0.74 ; 1.58 ± 0.24 and 1.72 ± 0.18 .

Conclusion By comparison of dimension values and flow rate through the pulmonary artery we have proved that type of oxygen support has no influence on the diameter and flow speed through the pulmonary artery in preterm infants < 35 weeks of gestation.

1137 ISOLATED AORTIC COARCTATION SEEN IN THE CHILDREN IN REPUBLIC OF KOSOVA A 12YEARS SINGLE CENTRE EXPERIENCE

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Introduction Aortic coarctation (CoA) accounts for 6 to 8% of live births with congenital heart disease and it represents a spectrum of lesions, generally encompassing variable degrees of tubular hypoplasia along with additionally stenotic areas within the aortic arch.

Objective Aim of this presentation is to describe pathoanatomical presentation, echocardiographic diagnosis, treatment and outcome of children with isolated CoA.

Methods Retrospectively we analyzed medical records and echocardiograms of 62 children with CoA during the past 11 years.

Results Patients (n = 61, 38 male or 62%) diagnosed with a median age of 14 months, aged from 4 days to 14 years. Clinical presentation depends from age of diagnosis, where children diagnosed less than 3 months of age (18 of them or 29%) manifested signs of heart failure; children diagnosed under from 3 to 12 month (32 or 51.6%) manifested signs of cardiac failure, often respiratory infection. Diagnosis were decided by echocardiography, where peak velocity was estimated by continuous Doppler. All children age under one year, disregard of type of coarctation, therapy was surgical, end-to-end anastomosis. In 4 children age 10 to 13 years, percutaneous balloon angioplasty were performed, in different centers, and in all of them short time after intervention, re-coarctation was noted. Re-coarctation was noted in 6 children.

Conclusion Isolated CoA is a CHD with excellent prognosis, especially in children under one year of age. Percutaneous balloon angioplasty is performed in adult patients but short term results are delicate and stent implantation were performed.

1138 TRANSITION FROM FOETAL TO NEONATAL LIFE: CHANGES IN CARDIAC FUNCTION ASSESSED BY SPECKLE-TRACKING TECHNIQUE

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Objective Assessment of cardiac function by speckle tracking (2D-S) echocardiography in the transitional period from foetal to neonatal life in a healthy population.

Methods Ultrasound assessment of cardiac function of 30 healthy foetuses at the gestational age of 28 and follow-up after birth using 2-D strain derived novel parameters such as strain (S), strain rate (SR), tissue velocities, MPI- and E/E'-index, E/A- and E'/A'-rate of both right (RV) and left ventricles (LV) and interventricular septum (IVS) and comparison to conventionally measured cardiac stroke volume (SV), cardiac output (CO) and ejection fraction (EF).

Results Ultrasound performance and analysis is technically feasible in all 30 foetuses and in the neonatal period. In foetuses, tissue velocities and SR measurements are homogenous for all regions of interest in both ventricles, and strain increases from apex to basis and is higher in the RV compared to LV. All calculated indices are almost identical for RV and LV.

After birth, strain and strain rate exhibit significantly lower values ($p < 0.001$) and systolic tissue velocities are significantly ($p = 0.001$) higher in comparison to fetal values in both chambers and in all regions of interest. The conventional methods for measuring EF, SV and CO show higher variability and lower reproducibility.

Conclusion The haemodynamic changes in cardiac function from foetal to neonatal life can be assessed by the novel method of speckle-tracking echocardiography which seems to be more reliable than conventional ultrasound techniques. Therefore, we recommend using speckle-tracking technique in routine follow-up of myocardial function in foetuses and neonates.

1139 RIGHT HEART DIMENSIONS AND FUNCTION AT 6 YEARS-OF-AGE USING 2D- AND 3D-ECHOCARDIOGRAPHY

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Background and Aim Survival after premature birth and neonatal lung disease is nowadays almost universal. To determine the long-term health outcomes for these infants, cardio-respiratory follow-up is needed. Whereas normative reference data for lung function in children exists, reference data of cardiac structure and function are at large lacking. The aim of this study was to determine right heart dimensions, volumes and function in healthy preschool children using echocardiography. We also wanted to compare right heart dimensions from 2D-images with volumes obtained from 3D-full volume single-beat echocardiographic measurements.

Methods Forty-one healthy children (23 boys) aged 6 years, mean weight = 24.1 ± 4.3 kg and mean height = 121.9 ± 4.3 cm, were assessed with echocardiography (Acuson SC2000, Siemens). Using 2D-echocardiography, we measured right ventricular (RVmajor/minor) and right atrial diameters (RA major/minor). Using pulsed waved Doppler tissue imaging we calculated the E/e'-ratio and the Tei-index. With 3D-echocardiography we also calculated volumes for the right ventricle (RVEDV, RVESV) and atrium (RAEDV, RAESV), as well as ejection fraction (EF) for RV.

Results The RVmaj was 53.0 ± 3.7 mm, RVmin 29.9 ± 3.1 mm, RVEDV 42.8 ± 7.5 ml, RVESV 18.9 ± 3.4 ml, RAmaj 35.3 ± 3.6 mm, RAmin 32.0 ± 3.1 mm, RAEDV 6.5 ± 2.4 ml, RAESV 15.8 ± 4.3 ml, E/e'-ratio 3.3 ± 0.7 , RV Tei-index 0.36 ± 0.09 and RVEF 56 (range 51–61) %. The length of right ventricle (RVmaj) measured with 2D correlated significantly with 3D estimated volumes (RVEDV, $r = 0.45$, $p < 0.01$). Right heart volumes correlated positively with BMI; RVEDV ($r = 0.61$, $p < 0.001$), RVESV ($r = 0.62$, $p < 0.001$), RAEDV ($r = 0.72$, $p < 0.001$) and RAESV ($r = 0.48$, $p < 0.01$).