The mean calculated Tei-I was 0.21±0.15 (0.01 to 0.41). Mean NT-proBNP values were higher, being normal in 10%. Pts with moderate or severe RV dilatation had higher levels of NT-proBNP (34±46±3 vs 681±253±7 pg/ml, p=0.04) and PR of higher degree (III IV) (46.7 ±17.6 vs 63.3±17.6 mg/ml, p=0.04) in comparison with pts without RV dilatation. Plasma NT-proBNP concentration was correlated with RVL gradient (r=0.40, p=0.03), with age at surgery (r=-0.67, p=0.01), with current age (r=0.77, p=0.01), but it RV-Tr gradient did not become related. Pts with grade 4R IV had a trend for a higher value of NT-proBNP (67±9±6 vs 46±4±6, p=0.01).

Conclusions: In our sample, Tei-I was paradoxically below the normal range. This can be explained by a reduction of soptometric relaxation time, caused by a severe degree of RV dilatation.

In evaluation of RV dysfunction by volume overload, Tei-I may have a low sensitivity by the existence of an additional diastolic compromise, in opposition to NT-proBNP which seems to be a good parameter of volume overload of the RV.

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The heart remodeling in children and youth with congenital aortic stenosis
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Background: In patients with aortic stenosis (AS) left ventricle (LV) remodeling is observed due to increased afterload. The hemodynamic LV profile changes in the natural history of the disease in patients with AS.

AIM: Noninvasive assessment of systolic and diastolic function in different types of LV hypertrophy and geometry in patients with AS.

Material and methods: The study group consisted of 120 children and youths with AS (average age 14.5±4.8 yrs). Group A consisted of the patients with LV-Ao gradient=40 mmHg (n=69), group B consisted of patients with LV-Ao gradient=40 mmHg (n=51). The following parameters were analyzed: Devereux LV mass index (LVMi), relative LV wall thickness (RLW), ejection fraction (LVEF), LV diastolic function - E/A, DT and IVRT. In 30 patients with LV diastolic dysfunction the propagation velocity of mitral inflow using color Mode and mitral atrial diastolic anterolateral velocity using tissue Doppler imaging were accessed.

Results: LV geometry: The LV concentric remodeling (E/A=0.89-0.5, LVMi: 88.6±31.5 g/m², n=62 in group A) and LV eccentric remodeling (E/A=0.4-0.44, LVMi: 153.3±37.5 g/m²) was observed in 69 patients of group A. LV systolic function: The highest mean values of EF were observed in patients with concentric hypertrophy (79.44±5.4%), the lowest values in patients with eccentric hypertrophy (52.15±4.3%). In 23 (69%) of patients with eccentric hypertrophy the indicators of systolic dysfunction were observed.

LV diastolic function: The relaxation disturbances were observed in 3/4 of patients in group A and 1/4 in group B. The maximum DCT and IVRT duration and minimum EF-vertical were observed in patients with eccentric LV hypertrophy (concentric hypertrophy: DCT= 204.6±21.7 ms, IVRT=62.9±4.4 ms, EA=0.550±0.05; concentric hypertrophy: DCT=186.7±5.4 ms, IVRT=78.4±4.2 ms, EA=0.64±0.05; eccentric remodeling: DCT=182±2.4 ms, IVRT=69±3.6 ms, EA=0.98±0.04). Tissue Doppler imaging revealed the proponderance of late diastolic mitral flow E'/A'<1 in patients with relaxation disturbances. In this group the decreased values of the propagation velocity of mitral inflow were also observed, Vp=25.2±5.4 cm/s.

Conclusions: 1. In majority of children and youth with AS concentric LV hypertrophy is observed. 2. The eccentric LV hypertrophy is a risk factor of LV systolic and diastolic dysfunction in children with AS.

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Sequential changes in longitudinal and radial myocardial deformation in the normal neonate heart
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Background: Significant hemodynamic changes occur during transition from the fetal to the neonatal environment, including pre and postnatal modifications. The ductus arteriosus closes, pulmonary vascular resistance decreases and pulmonary blood flow increases. Strain rate (SR) and strain (e) have been proposed which seems to be a good parameter of volume overload of the RV.

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Atrial septal defect or interatrial communication?
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Introduction: Adult patients (P) with atrial septal defect (ASD) describe their physical performance as normal, it may delay the decision to close the defect. Subjective perception of physical fitness does not fully relate to clinical status. The study aimed to determine exercise capacity using cardiopulmonary exercise test and RV performance in adult asymptomatic ASD patients.

Material and methods: 36 P (25F), aged 44.7±8.2 yrs, with patent ASD II were studied. Controls: 25 healthy individuals (15F), aged 45.6±6.1 yrs. Echo examination, electrocardiogram, chest X-ray and echocardiography were performed. In 30 patients with ASD the mean measured with the modified Bruce protocol (mod-Bruce) was performed following spirometry at rest, where forced vital capacity (FVC), tidal volume (VT), minute ventilation (VE), forced expiratory volume (FEV1) and peak oxygen consumption (peak VO2) VE/VO2 slope were measured. Plasma BNP was measured by immunometric essay (Shionoria BNP kit).

Results: 31 P (98%) classified as NYHA I, 5 P (14%) as NYHA II. BNP levels in P group were higher than in controls (60.6±24.9 g/ml vs. 32.6±22.4 g/ml, p=0.002). Following parameters are decreased in studied group when compared to controls: peak VO2: 22.1±5.8 l/min/g (p=0.00001); HRmax: 159±4.2 l/min (p=0.001); peak EPP: 153.3±15.9 mmHg (p=0.0003); VE: 59.8±17.9 l/min (p=0.0003); RV: 1.03±0.06 (p=0.01); FVC: 3.4±0.9 l (p=0.0005); FVC%: 90.4±18.9% (p=0.0002); FEV1: 1.6±0.5 l (p=0.0008); FEV1: 2.6±0.7 l (p=0.008); FEV1%: 81.8±18.9% (p=0.0002); FEV25-75%: 29±8 l (p=0.01); VE/VO2: high in studied group than in controls 31.3±12.3 (p=0.001) and exceeded 34 in 5 P (14%). The negative correlations were found between: peak VO2 and Qp:Qs (p=0.004), peak VO2 and RVSP (p=0.06), HR and RVMax (p=0.02), FEV1 and RV (p=0.04), FEV1 and RVSP (p=0.01), RV and RVSP (p=0.04), exercise duration and Qp:Qs (p=0.03); BNP and VO2 (p=0.04), BNP and VO2 (p=0.07). The positive correlations were shown between: VE/VO2 and Qp:Qs (p=0.098), HR max and peak VO2 (p=0.005); BNP and RV (p=0.00), BNP and Qp:Qs (p=0.00).

Conclusions: 1. Exercise capacity is significantly reduced in ASD adults, contrary to the high subjective perception of their fitness. 2. Reduced exercise capacity results from decreased cardiac output due to altered anatomy of the heart and functional lung pathologies consequent to enhanced pulmonary blood flow. 3. Lower BNP levels in these P appear to result from right ventricular volume overload.

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Background: In English language literature any interatrial communication is named an atrial septal defect (ASD). However, the precise nature of atrial septal, as visible from inside of the right atrium, includes only the flap valve and muscular tissue surrounding the flap. In the right atrial septum there are several communication indeed. Transoesophageal echocardiography (TEE) is ideally suited to perform a comprehensive atrial septal examination.

Results: TEE examinations performed to 35 patients (mean age 37±16 years, 10 males and 16 females) diagnosed with "non-septum" ASD were retrospectively reviewed to assess the true atrial septum involvement in the heart defect.