Ventricular septal defect - not only congenital heart disease.

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Ventricular septal defect (VSD) is one of the most common congenital lesion. However in some situations damage of the interventricular septum (IVS) occurs and an acquired ventricular septal defect (aVSD) develops.

Study group consisted of: 67 pts, 36 male and 31 female, age from 22 to 84 years; 59 pts (88%) after myocardial infarction (MI), 2 pts (3%) with a knife chest trauma, 1 pt after postsurgical treatment of hypertrophic cardiomyopathy, 1 pt after valvulotomy in congenital aortic stenosis, 1 pt after aortic valve replacement and 3 with endocarditis.

Method: transthoracic echocardiogram and transesophageal examination in selected pts before or during surgical and invasive procedure were performed.

Results: TTE directly visualized the ruptured IVS in all pts with postinfarction and stab wound VSDs (91% of aVSD). It was necessary to perform diagnostic TEE to demonstrate iatrogenic and postinfecitious VSDs (9%).

In group with VSD following MI (in 39 anterior – 66%, in 20 inferior – 34%) mortality was 27% (16pts); 35 pts were operated (died 13 – 37%); in 8 pts aVSD was closed with Amplatzer occluder, in 1pt with 2 devices.

In remaining pts with aVSD – 7 of them were successfully operated; 1 with HCM died.

Conclusions: 1. VSD could be an acquired lesion. 2. MI is the most common reason of aVSD. 3. Iatrogenic VSD is getting to be more frequent. 4. aVSD is associated with a significant mortality. 5. TEE is necessary only in exceptional cases for diagnosis and decision making or to control surgical or invasive intervention.

Automated measurement of pulmonary output using a new echocardiographic method.

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Background: The echocardiographic calculation of pulmonary output remains difficult because of the complexity of pulmonary flow. A new automated echocardiographic technique for the measurement of cardiac output measurement (ACM) has been recently developed and validated for aortic output.

The aim of this prospective study was to assess the feasibility and the accuracy of ACM method for the calculation of pulmonary output.

Methods: In a population of intracardiac shunt (n = 15, mean age 49 years (range 18-74), atrial septal defect (n = 8) or ventricular septal defect (n = 7)), we have measured the cardiac output both by ACM method for the calculation of pulmonary output.

Results: All measurements were available excepted one using ACM and two using PW Doppler. Mean values (±SD) of pulmonary output were 10.3 ± 4.2 l/mn using catheterisation, 11.4 ± 8.2 l/mn using PW Doppler method and 9.4 ± 5 l/mn using ACM. Correlations of pulmonary output between catheterisation using oximetric method and echocardiography were 0.81 (for PW Doppler) and 0.88 (for ACM).

Using ACM, Bland-Altman analysis revealed a good agreement with invasive data (Figure).

Conclusion: These data suggest that automated cardiac output measurement is a feasible and accurate method for the calculation of pulmonary output.

Sensitivity and specificity of the colour-duplex ultrasound in functional assessment of the LIMA bypass patency.

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Purpose: With the extensive use of left internal mammary artery (LIMA) as a coronary bypass the non-invasive diagnostic method is gaining a prior necessity in the long-term postoperative LIMA follow-up. The aim of this study was to evaluate the non-invasive colour-duplex ultrasound technique in assessment of the LIMA graft functional status compare to the angiography as a reference method.

Methods: We examined 451 patients after myocardial revascularization with the internal mammary artery bypass using the Hewlett Packard 2500, 5500 ultrasound units. Using the 7.5 MHz linear transducer we detected the LIMA from the left supraventricular approach at rest. We assessed the peak systolic velocity (PSV - cm/s), peak diastolic velocity (PDV - cm/s), end-diastolic velocity (EDV - cm/s) and we calculated the peak systolic/peak diastolic velocity ratio (SDVR) and resistance index (PSV/EDV/PSV).

The ultrasound results of 108 patients we compared to angiography.

Results: We observed the low resistance biphasic Doppler waveform of the patent coronary artery grafts. In dysfunctional grafts we found decrease of diastolic flow velocity, which represents altered coronary perfusion through the LIMA graft, and an increase of RI and SDVR. Compared to angiography the ultrasound detection rate of the LIMA grafts was 92.59%. Successfully visualisation of 8 grafts, tru negative results in 67 cases, tru positive 20, false negative 4, false positive 8. In one case we detected coronary subclavian steal syndrome. The sensitivity of the colour-duplex ultrasound was 83.33%, the specificity was 89.23%. The SDVR of functional grafts was 1.54±0.36, dysfunctional grafts 3.47±0.89. The SDVR of < 2.0 best showed the absence of LIMA bypass dysfunction.

Conclusion: The colour-duplex ultrasound is a useful non-invasive method for the postoperative follow-up of patients with the LIMA graft. It allows the assessment of the impaired LIMA perfusion caused by LIMA stenosis or by atherosclerosis of the coronary artery distal from LIMA anastomosis. SDVR is the sensitive marker for exclusion of the bypass failure.