Abstract: P6482

**Stress echocardiography in the assessment of long-term outcomes results of aortic valve replacement with mechanical prostheses of small size**

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**Relevance:**
Evaluation of the function of aortic mechanical prostheses of small size in the long-term period is an topical problem, due to the fact that a narrow fibrous ring occurs in 20-35% of cases of patients with aortic stenosis.

**Objective:** to study clinical and hemodynamic parameters of small size aortic prostheses using stress echocardiography in the long-term period after valve replacement

**Materials and methods:** the study included 89 patients (54 women, 35 men) who underwent aortic valve replacement with a landing diameter of 21 mm or less.

The average was 48,1 ± 11,3 years. BSA of 1,8 m2 (1.3 to 2.2). The following models of prostheses were used: On-X, ATS-AP, Carbomedics, St. Jude Medical. All patients after surgical correction in the long-term period (an average of 5,9 ± 3,3 years from 1 to 11 years) underwent a comprehensive clinical and instrumental examination, including an ECG and stress - echocardiography with bicycle exercise.

**Results:** in the long-term period after aortic valve replacement of mechanical prostheses of small size, the ECG showed regression of hypertrophy and overload of the left ventricle.

According to stress- echocardiography, there was a significant increase in load tolerance. At the peak of the load, the following were recorded: improvement of the pumping function and cardiac performance (stroke volume, cardiac output, cardiac index), improvement of myocardial work index (Tei - index), increase in speed parameters on the aortic valve prosthesis no more than 30% of the initial values.

In reposit, the maximum and mean pressure gradients were 26.3 ± 9 mm Hg and 14.3 ± 5.4 mm Hg, effective orifice area (EOA) 1,7 ± 0,3 cm2, index effective orifice area (EOAi) 0,93 ± 0,2 cm2/m2. When the submaximal load levels were reached, the maximum and mean pressure gradients were 33,5 ± 6,0 mm Hg and 17,1 ± 4,0 mm Hg, EOA - 1,5 ± 0,4 cm2, EOAi - 0,79 ± 0,6 cm2/m2.

**Conclusions:** The findings suggest that modern models of aortic prostheses with an increased effective orifice area provide good clinical results in the long term. Stress echocardiography is a necessary and highly informative method for assessing the parameters of mechanical aortic prostheses and heart function.