Trans-Esophageal Echocardiography in Patients with Low Gradient Severe Aortic Stenosis

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Background and purpose: Grading aortic stenosis (AS) and management decisions are challenging when echocardiographic data is discordant. The aim of the study was to assess the value of Trans-Esophageal Echocardiography (TEE) in patients with low gradient severe AS and normal LV systolic function.

Methods: Retrospective study of patients who had TEE within 6 months of having a Trans-Thoracic Echocardiography (TTE) for the evaluation of AS. Patients with normal left ventricular systolic function, aortic valve area (AVA) corresponding to a severe grade of stenosis as assessed by the continuity equation but gradients corresponding to non-severe AS were included.

Results: 39 patients had TTE and mean time to TEE was 53 ± 52 days. Age was 76 ± 10 years and 72% were female. Functional capacity class was 2.7 ± 0.7. The main symptom was dyspnea in 67% of patients. There was no difference between TTE and TEE aortic valve peak and mean gradients (54±9 and 54±11; 34±6 and 33±7mmHg, respectively) nor between TTE and TEE AVA assessed by the continuity equation (0.78 cm^2±0.15 and 0.77 cm^2±0.20, respectively). AVA planimetry was measured in 8% of patients at TTE and in 85% at TEE. There was a trend for a larger left ventricular outflow tract diameter (LVOTd) in TEE compared to TTE (21.9±2.5mm vs. 19.8±2.1mm, respectively; p = 0.06). AVA assessed by planimetry in TEE was significantly larger than AVA assessed by the continuity equation in TTE (0.89±0.^{2}vs. 0.78±0.15cm^2, respectively; p = 0.01). 15 patients underwent aortic valve replacement or implantation of a stented valve at 8.5 ±11 months from TTE. 12 patients died at a mean time of 20.1 ± 19 months from TTE.

Conclusion: TEE provides valuable data for the assessment of patients with low gradient severe AS. AVA planimetry and accurate measurement of LVOTd are extremely important when decision for intervention is necessary in this group of symptomatic patients with poor functional class and high morbidity and mortality.