

Non-parametric pairwise multiple comparisons in independent groups: Kruskal-Wallis.

Comparisons in groups	1	2	3
2	0.025		0.001
3	0.001	0.001	
4	0.001	0.001	0.028

Figure 1

classification should be used by echocardiography in clinical practice. The presence of raphe was more frequently associated with calcification.

P1760

Left ventricular myocardial work efficiency as an independent correlate of the presence of heart failure in patients with severe aortic stenosis and preserved left ventricular ejection fraction

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Symptoms' occurrence plays a key role in the management of patients (pts) with severe aortic stenosis (AS) and preserved left ventricular ejection fraction (LVEF). However, the presence of heart failure (HF) symptoms, reflecting the exhaustion of LV compensatory mechanisms, may be difficult to assess in elderly pts with AS. New echocardiographic indices of LV function are able to detect the subtle alterations in myocardial mechanics and emerge as promising tools for improving risk stratification in these pts.

We aimed to assess the differences in LV mechanical dispersion and myocardial work efficiency between symptomatic and asymptomatic pts with severe AS and preserved LVEF, and the relationship between the impairment of these parameters and the presence of HF symptoms.

Methods: We prospectively included 75 pts with severe AS (aortic valve area, AVA <1 cm²) and LVEF >50%, in sinus rhythm, with no more than mild aortic or mitral regurgitation. Patients were divided into two groups based on the presence of HF: symptomatic (49 pts) and asymptomatic (26 pts). A negative exercise echocardiography was required to confirm the asymptomatic status. Segmental LV strain analysis was assessed by speckle tracking echocardiography and the dispersion of regional LV strain curves was computed automatically. LV myocardial work was evaluated using a non-invasive method to quantify segmental work using segmental strain and a standardized LV pressure curve adjusted to brachial cuff pressure and valvular events. LV myocardial work efficiency (constructive work divided by the sum of constructive and wasted work), a parameter which is not affected by peak LV pressure, was derived.

Results: No significant differences were found between symptomatic and asymptomatic pts regarding age (66±11 vs 64±16 yrs, p=0.5), gender, cardiovascular risk factors and comorbidities (p>0.1 for all) and the severity of AS (AVA, 0.73±0.17 vs. 0.78±0.17 cm², p=0.1 and mean gradient 59±18 vs. 55±23 mmHg, p=0.5). Indexed LV mass and LVEF were not significantly different between symptomatic and asymptomatic pts (142±35 vs. 137±29 g/m², p=0.5 and 63.5±6.9 vs. 63.8±5.1%, p=0.8) while global LV longitudinal strain was more impaired in symptomatic pts (-15.1±3.6 vs. -16.8±2.6% p=0.03). LV mechanical dispersion was 55±16 ms in asymptomatic pts and significantly higher in symptomatic pts: 66±18 ms (p=0.01). LV myocardial work efficiency was significantly lower in symptomatic compared to asymptomatic pts: 91±4 vs. 94±3%, p=0.002. In multivariate analysis this parameter emerged as an independent correlate of the presence of HF symptoms (p=0.004).

Conclusions: In symptomatic patients with severe AS and preserved LVEF we found an increased LV mechanical dispersion and impaired LV work efficiency compared to asymptomatic pts with the same degree of AS severity, LV hypertrophy and similar LVEF. LV myocardial work efficiency was an independent correlate of the presence of HF symptoms in our study group.

P1761

Prognostic impact of left ventricular diastolic dysfunction in severe aortic stenosis patients undergoing surgical valve replacement

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Introduction: Whether left ventricular (LV) diastolic dysfunction in severe aortic stenosis patients is reversible after surgical aortic valve replacement (SAVR) and has impact on long-term survival is not fully elucidated.

Purpose: The aim of this study was to assess the changes in LV diastolic dysfunction one year after SAVR according to the grading system proposed by the American Society of Echocardiography (ASE)/European Association of Cardiovascular Imaging (EACVI) 2016 recommendations. Furthermore, the prognostic value of LV diastolic dysfunction grade and the determinants of having increased left atrial pressure at 1 year follow-up were evaluated.

Methods: Clinical and echocardiographic data of consecutive patients with severe aortic stenosis undergoing SAVR were retrospectively analysed. LV diastolic dysfunction grade was determined before and at 1 year follow-up after SAVR. Data on all-cause mortality were collected at long-term follow-up.

Results: A total of 227 patients (mean age 67±12, 64% male; mean LVEF 56±12%) were included. When the grading system method was inconclusive the patients were excluded. Significant improvement in LV diastolic dysfunction grade was observed at 1 year follow-up (Figure Panel A); in particular the prevalence of grade II and grade III diastolic dysfunction with increased left atrial pressure (LAP) at 1 year follow-up was 32% and 5%, respectively. While LV diastolic dysfunction grade II and III at baseline were not associated with all-cause mortality after SAVR, having LV diastolic dysfunction grade II or III 1 year after SAVR was associated with a significantly lower cumulative survival rate at long-term follow-up as compared to grade I (log rank p=0.013) (Figure Panel B). Patients with grade II and III diastolic dysfunction at 1 year follow-up were older (71±11 vs 65±12 years, p=0.001) and had higher prevalence of NYHA class 3-4 (31% vs 17%, p=0.05), higher left atrial volume index (LAVI) (40±15 vs 31±13 ml/m², p<0.001) and larger left ventricle mass index (LVMI) (133±41 vs 118±37 g/m², p=0.007) at baseline as compared to their counterparts. Independent correlates of increased LAP at 1 year follow-up were age (odds ratio [OR] 1.05, 95% CI 1.01 to 1.08, p=0.01) and LAVI (OR 1.03, 95% CI 1.002 to 1.06, p=0.037), after correcting for hypertension, LVMI and E to e' ratio.

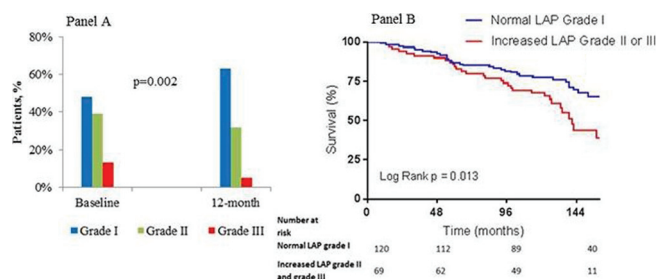


Figure 5

Conclusions: In patients with severe aortic stenosis who underwent SAVR, LV diastolic dysfunction is reversible. The grade of LV diastolic dysfunction 1 year after SAVR, but not the grade before SAVR, is associated with long-term all-cause mortality.

P1762

Global, but not basal, longitudinal strain improves after aortic valve replacement in severe aortic stenosis

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Background: Strain imaging by 2D speckle tracking echocardiography (STE) is a method to assess global, regional and layer-specific myocardial function. Longitudinal strain in primarily the basal segments of the heart has been shown to be reduced in severe aortic stenosis. We set out to evaluate if this was reversed by aortic valve replacement (AVR).

Methods: Forty-five patients referred to AVR due to severe aortic stenosis were included prospectively. All patients had 2D STE performed in apical four-, two- and three-chamber view prior to AVR and at 3 months follow-up. Regional layer-specific strain was achieved by averaging peak longitudinal systolic strain from the endo-, midmyo- and epicardium in a 16-segment LV model. Ischemic heart disease was ruled out by coronary angiography.

Results: Longitudinal strain in the basal segments was significantly reduced in all 3 myocardial layers compared to mid- and apical values preoperatively (Table 1). Global (GLS), apical and mid-ventricular strain improved across all myocardial layers whereas basal longitudinal strain showed no improvement in any layer. LVEF by Simpson's Biplane (p=0.21) and wall motion score (p=0.81) showed no improvement.

Conclusion: GLS improves after AVR in patients with severe aortic stenosis.