Poster Session

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The prognostic value of left ventricle longitudinal strain and cardiac biomarkers in asymptomatic patients with chronic severe aortic regurgitation

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Background. Because of adaptive remodelling of the left ventricle (LV), patients with chronic severe aortic regurgitation (AR) can remain asymptomatic for prolonged periods. The main clinical challenge is to avoid irreversible damage to the myocardium and LV dysfunction, but the time of surgery should be such that the benefits of surgery outweigh the risks at that particular time. We aimed to evaluate the predictive value of global LV longitudinal strain (GLS) and natriuretic peptide in severe AR.

Methods. Comprehensive and 2D speckle tracking echocardiography was performed in 84 patients with severe AR. Patients were divided into the asymptomatic group (n = 56; 41 men; mean age 46.1 ± 15.4 years) and the group with indications for AV surgery (n = 28; 27 men; mean age 49.0 ± 14.3 years). Asymptomatic patients were followed for about 4.4 ± 2.4 years. The primary endpoint was to detect the development of HF symptoms, deterioration in the LVEF(≤50%) and/or severe LV dilatation (EDD > 70mm or ESS > 50mm).

Results. Patients with the need of AV surgery showed a significantly larger impairment in GLS and higher increase in the values of NT-proBNP compared to asymptomatic patients (-17.2 ± 2.6 vs. -19.1 ± 2.4%, and 149.4 [86.6–500] vs. 112.5 [45.3–180.8]pg/mL, P < 0.05, resp.). Of the 56 patients who were initially asymptomatic, 49 patients were prospectively monitored. The primary endpoint was reached in 16 (33%) patients with AR. Despite the preserved LVEF at baseline, patients in need of AV surgery had lower GLS compared to those who remained stable while being monitored (-17.1 ± 2.3 vs. -20.1 ± 1.8%, P < 0.05). The baseline levels of NT-proBNP were higher among patients who progressed to needing AV surgery in comparison to that in no need of AV surgery at follow-up (194 [135-421.8] vs. 75.9 [34.1-136.7]pg/ml, P < 0.05). In multivariate analysis, GLS and NT-proBNP were independent predictors of AV surgery. ROC analysis showed that the probability of primary endpoint occurrence was greater in patients with GLS >-18.5% (AUC:0.85, P < 0.05) and NT-proBNP >130pg/ml (AUC:0.81, P < 0.05).

Conclusion. GLS and NT-proBNP may be used as independent prognostic predictors of optimal timing of operation in asymptomatic severe AR during follow-up.

Multivariate analysis

Variables	OR (95% CI)	P
Age	0.97 (0.89-1.06)	0.54
LV ESD	1.02 (0.78-1.34)	0.87
LV EF	1.07 (0.74-1.56)	0.71
GLS	3.36 (1.09-10.36)	0.035
NT-proBNP	1.02 (1.0-1.04)	0.049