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Prognostic role of Multilayer Strain Speckle Tracking Echocardiography in patients with severe aortic stenosis treated with Transcatheter Aortic Valve Implantation

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Background: Myocardial Strain evaluation helps to assess the efficacy of therapeutic interventions and to predict the prognosis and clinical outcomes. The aim of the present study was to assess whether Multilayer Global Longitudinal Strain (GLS) can be useful in estimation of left ventricle (LV) function in patients with severe symptomatic aortic stenosis (AS) who have undergone transcatheter aortic valve implantation (TAVI).

Methods: 35 patients with severe AS who successfully underwent TAVI, were enrolled in the study. GLS was measured from the endocardial layer (Endo-LS), epicardial layer (Epi-LS) and full thickness of myocardium before the procedure. Analysis included other parameters such as age, sex, LV volumes and ejection fraction (LVEF), type of prosthesis implanted, right ventricular (RV) dimension and function. Occurrence of cardiovascular (CV) events (rehospitalization for HF or CV death) were collected after 24 months follow-up. Results: CV events occurred in 7 patients (20%). Patients were divided in two groups accordingly with CV events occurrence. No differences in baseline, demographic, echocardiographic and procedural characteristics were found. Patients who developed CV events had a more impaired pre-procedural GLS ($-10.2 \pm 2.4\%$ vs $-12.6 \pm 2.2\%$, $p = 0.029$), mostly due to his subendocardial layer (Endo-LS -10.8 ± 2 vs -13.9 ± 2 , $p = 0.003$). Moreover, by ROC curve analysis, a cut-off value of -12.4% of endo LS was associated with CV events (sensitivity of 83% and specificity of 65%, AUC 0.8, $p = 0.024$), with a log-rank p value assessed by survival analysis of 0.044.

Conclusion: Multilayer GLS analysis could provide additional information for prognosis stratification in patients with severe symptomatic AS before TAVI, above and beyond assessment of LVEF alone.

Parameter	Event-group (7/35 pz= 20%)	Non-event group (28/35 pz= 80%)	p
Age (y.o)	86 ± 4	80 ± 7	NS
LVEDV (ml)	112 ± 34	94 ± 32	NS
LVESV (ml)	51.2 ± 6	56.9 ± 6	NS
LVEF(%)	55.7 ± 6	56.9 ± 6	NS
AVA (cm ²)	0.77 ± 0.2	0.73 ± 0.2	NS
GLS (%)	-10.2 ± 2.4	-12.6 ± 2.2	0.029
Endo-LS (%)	-10.8 ± 2	-13.9 ± 2	0.003
Epi-LS (%)	-10.2 ± 2	-11.9 ± 2	NS

Abstract P1752 Figure.

