

## Prognostic implication of electrocardiographic left ventricular strain in patients undergoing Transcatheter Aortic Valve Implantation

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Funding Acknowledgement: Type of funding source: None

**Background:** Electrocardiographic (ECG) strain has been linked to excess cardiovascular morbidity and mortality in asymptomatic patients with aortic stenosis.

**Purpose:** We aim to determine the differential impact of baseline ECG-strain on long-term mortality after transcatheter aortic valve implantation (TAVI).

**Methods:** Patients with severe and symptomatic aortic stenosis (effective orifice area [EOA]  $\leq 1\text{cm}^2$ ), who were scheduled for TAVI with a self-expanding valve between May 2015 and May 2018 were consecutively enrolled. Left ventricular strain was defined as the presence of  $\geq 1\text{mm}$  convex ST-segment depression with asymmetrical T-wave inversion in leads V5 to V6 on baseline ECG. Patients were excluded, if they had bundle branch block or a permanent pacemaker at baseline. Baseline parameters were compared, and multivariate Cox proportional hazard regression models were generated to assess outcome difference. The primary clinical endpoint was cumulative mortality defined according to the criteria proposed by the Valve Academic Research Consortium-2.

**Results:** Of the 171 patients screened, 56 patients were excluded due

to left bundle branch block or paced rhythm. In the 115 included patients (mean age:  $81.4 \pm 7$ ), 36 patients (31.3%) had strain pattern on pre-TAVI ECG. There were no differences in baseline characteristics between the two groups. During a median follow-up of 2.32 years (IQR 1.62 to 3), 11 patients (9.6%) reached the primary clinical endpoint. Patients in the strain group had higher incidence of all-cause mortality compared to patients without left ventricular strain (25% vs 2.5%,  $\chi^2=14.4$ ,  $p<0.001$ ). Kaplan-Meier survival analysis showed a significantly decreased cumulative probability of survival at 3 years in patients with LV-strain compared with patients without LV-strain (log-rank  $p=0.002$ , Figure 1). In the multivariate analysis, left ventricular strain [Exp(B): 8.952, 95% Confidence Interval (CI): 1.215–65.938, B=2.192,  $p=0.031$ ] and QRS duration [Exp(B): 1.058, 95% CI: 1.022–1.095, B=0.056,  $p<0.001$ ] were found to be independent predictors of all-cause mortality after TAVI.

**Conclusion:** Baseline ECG left ventricular strain was an independent predictor of long-term mortality post TAVI. Systematic strain measurements might aid in risk-stratifying patients scheduled for TAVI.

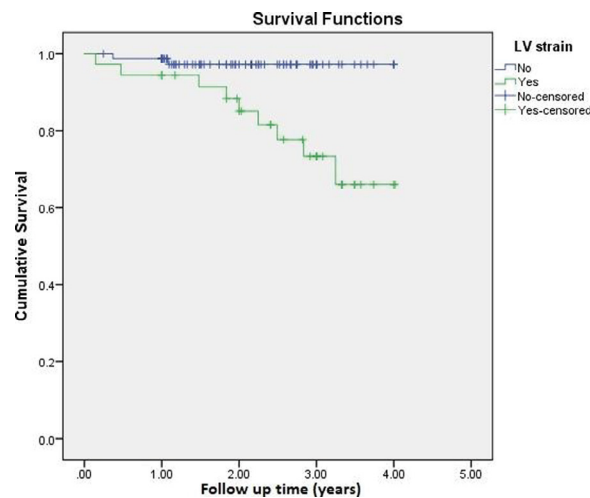


Figure 1