Abstract: P6485

Incremental prognostic value of electrocardiographic strain after transcatheter aortic valve replacement for aortic stenosis

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Topic(s):
Valvular Heart Disease: Intervention

Citation:
Background – Electrocardiographic (ECG) strain pattern has recently been associated with increased adverse outcome in aortic stenosis (AS) and after surgical aortic valve replacement (AVR). However, the relation linking ECG strain and cardiovascular MACE in patients with transcatheter aortic valve replacement (TAVR) has not been yet described.

Objectives – The aim of our study was to determine the impact and incremental value of ECG Strain pattern in predicting adverse outcome after TAVR.

Methods – 585 patients with severe AS (mean age: 83 ± 7 male 39.8%) were enrolled from November 2012 to May 2018. ECG strain pattern was defined as ≥1 mm concave down-sloping ST-segment depression and asymmetrical T-wave inversion in the lateral leads. Patients with baseline left bundle branch block (LBBB), right bundle branch block (RBBB) or ventricular paced rhythm were excluded. All patients underwent transthoracic echocardiography (TTE) before TAVR and at 30 days follow up. The primary endpoints of the study were the overall all-cause mortality after TAVR, rehospitalization for Hearth failure (HF), myocardial infarction and stroke.

Results – 178 (30.4%) patients were excluded from analyses owing to the presence of either LBBB (n=103) or RBBB (n=75). Among the 407 remaining patients, 106 had ECG strain pattern (26.04%). Patients with ECG strain were significantly younger (81.6 ± 8 years vs 83.5 ± 6.8 years; p = 0.022), had lower BMI (23±4.5 kg.m² vs 27.9 ± 6.8 kg.m²; p=0.02) more severe AS (mean gradient 52.3 ± 15.2 mmHg vs 47.9 ± 11.8 mmHg; p = 0.003), significant lower LVEF (51.8 ± 15 % vs 58.4 ± 10.7% ; p < 0.001). Left ventricular hypertrophy (LVH) was more frequent in patients with ECG Strain (indexed left ventricular mass (135.9 ± 33.4 g.m² vs 123.6 ± 31.9 g.m²; p = 0.002)). Death from any cause (22 (20.8%) vs 61 (20.3%); p = 0.508) did not differ significantly between groups. Major adverse cardiovascular events (MACE) including death, stroke and heart failure at 1 month showed similar incidence (7 (6.6%) vs 17 (5.6%), p = 0.439). Rehospitalization for heart failure (HF) was significantly higher (33 (31.1%) vs 33 (11%); p <0.001) in patients with ECG strain pattern. In univariate model, ECG Strain was a strong predictor of rehospitalization for HF (HR 2.621 95% CI (1.607-4.277), p = 0.001), independently of LVH assessed either by ECG criteria (HR 1.181 95% CI (0.698-1.997; p=0.536) or TTE (HR 1.557 95% (CI 0.701-3.458; p=0.277). ECG Strain remained associated with a higher risk of rehospitalization for heart failure in multivariate analyses (HR 2.747 95% (CI 1.614-4.674); p<0.001)

Conclusion – In patients with AS eligible for TAVR, ECG Strain Pattern is frequent and associated with an increased risk of post interventional heart failure regardless of preoperative LVH. ECG Strain pattern represents an easy, objective, reliable and low-cost tool to identify patients who may benefit from an extend and intensified post-interventional follow-up.
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