Clinical usefulness of relative apical sparing pattern for predicting functional recovery after transcatheter aortic valve implantation in patients with severe aortic stenosis

K. Matsuda, H. Okayama, T. Kazatani, H. Okabe, S. Kido, T. Aono, Y. Tanaka, T. Kosaki, G. Kawamura, T. Shigematsu, Y. Kawata, G. Hiasa, T. Yamada, Y. Kazatani

Ehime Prefectural Central Hospital, Matsuyama, Japan
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Background: Relative apical sparing pattern (RASP) is thought to be associated with prognosis in patients with cardiac amyloidosis or left ventricular hypertrophy (LVH). Although almost all patients with severe aortic stenosis (AS) have LVH, little is known about the effect of transcatheter aortic valve implantation (TAVI) in patients with severe AS exhibiting a RASP.
Purpose: This study aimed to elucidate the effect of TAVI on left ventricular global longitudinal strain (LS; LVGLS) in patients with severe AS exhibiting a RASP.
Methods: Eighty-four patients who underwent transfemoral or subclavian TAVI were evaluated. They were divided into the RASP and non-RASP groups. The average apical LS divided by the sum of the average mid and basal LS values of >1.0 was defined as the RASP. We analyzed the difference between pre- and post-TAVI LVGLS ($\triangle$GLS = post-TAVI LVGLS – pre-TAVI LVGLS).
Results: Of the 84 patients (mean age, 84.5±3.9 years; 24 men), 15 (17.9%) exhibited a RASP. No significant difference in mean pre-TAVI LVGLS was found between the RASP and non-RASP groups (–16.6% ± 3.8% vs. –15.8% ± 3.9%). The $\triangle$GLS in the RASP group was significantly higher than that in the non-RASP group (–0.97% ± 2.5% vs. –2.6% ± 3.0%; $P<0.05$). Multivariate analysis revealed that relative apical longitudinal strain was an independent predictor of $\triangle$GLS ($\beta = 0.35$, $p=0.002$).
Conclusion: Relative apical longitudinal strain was associated with LVGLS recovery. The effect of TAVI on LVGLS in patients with a RASP is inferior to that in patients without a RASP.