

Prognostic implications of left ventricular global longitudinal strain in patients with bicuspid aortic valve disease and preserved left ventricular ejection fraction

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Abstract

Aims

In patients with bicuspid aortic valve (BAV) and preserved left ventricular (LV) ejection fraction (EF), the frequency of impaired LV global longitudinal strain (GLS) and its prognostic implications are unknown. The present study evaluated the proportion and prognostic value of impaired LV GLS in patients with BAV and preserved LVEF.

Methods and results

Five hundred and thirteen patients (68% men; mean age 44 ± 18 years) with BAV and preserved LVEF ($>50\%$) were divided into five groups according to the type of BAV dysfunction: (i) normal function BAV, (ii) mild aortic stenosis (AS) or aortic regurgitation (AR), (iii) \geq moderate isolated AS, (iv) \geq moderate isolated AR, and (v) \geq moderate mixed AS and AR. LV systolic dysfunction based on 2D speckle-tracking echocardiography was defined as a cut-off value of LVGLS (-13.6%). The primary outcome was aortic valve intervention or all-cause mortality. The proportion of patients with LVGLS $\leq -13.6\%$ was the highest in the normal BAV group (97%) and the lowest in the group with moderate and severe mixed AS and AR (79%). During a median follow-up of 10 years, 210 (41%) patients underwent aortic valve replacement and 17 (3%) died. Patients with preserved LV systolic function (LVGLS $\leq -13.6\%$) had significantly better event-free survival compared to those with impaired LV systolic function (LVGLS $> -13.6\%$). LVGLS was independently associated with increased risk of events (mainly aortic valve replacement): hazard ratio 1.09; $P < 0.001$.

Conclusion

Impaired LVGLS in BAV with preserved LVEF is not infrequent and was independently associated with increased risk of events (mainly aortic valve replacement events).

KEYWORDS: bicuspid aortic valve, global longitudinal strain, prognosis

Topic: aortic valveaortic valve insufficiencyaortic valve stenosisleft ventricular ejection fractionechocardiographybicuspid aortic valveleft ventricleaortic valve replacementfollow-upstrokepatient prognosisLVGLSsystolic dysfunctiontwo-dimensional speckle trackinglongitudinal strain

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