

MEETING REPORT

Abstract 2: First-phase ejection fraction is a powerful predictor of adverse events in asymptomatic patients with aortic stenosis and preserved total ejection fraction

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Objectives

First-phase ejection fraction (EF1), the ejection fraction up to the time of maximal ventricular contraction may be more sensitive than existing markers in detecting early systolic dysfunction. We examined the prognostic value of EF1 in patients with aortic stenosis (AS), a condition in which left ventricular dysfunction as measured by conventional indices is an indication for valve replacement.

Methods

The predictive value of EF1 compared to conventional echocardiographic indices for outcomes was assessed in 218 asymptomatic patients with at least moderate AS, including 73 with moderate, 50 with severe and 96 with 'discordant' (aortic area < 1.0 cm² and gradient < 40 mmHg) AS, all with preserved EF, followed for at least 2 years (Fig. 1). EF1 was measured retrospectively from archived echocardiographic images by wall tracking of the endocardium. The primary outcome was a combined event of aortic valve intervention, hospitalisation for cardiac causes and death from any cause.

Results

EF1 was the most powerful predictor of events in the total population and all sub-groups (Fig. 2). A cut-off value of 25% gave hazard ratios (for EF1 < 25% compared to ≥ 25%) of 27.7 (95% CI 13.1–58.7, $P < 0.001$) unadjusted and 24.4 (11.3–52.7, $P < 0.001$) adjusted for other echocardiographic measures, including global longitudinal strain, for events at 2 years in all patients with asymptomatic AS. Corresponding hazard ratios for all-cause mortality in the total population were 17.5 (5.7–53.3) and 17.4 (5.5–55.2) unadjusted and adjusted, respectively.

Conclusion

EF1 may be potentially valuable in the clinical management of patients with AS and other conditions in which there is a progression from early to late systolic dysfunction.

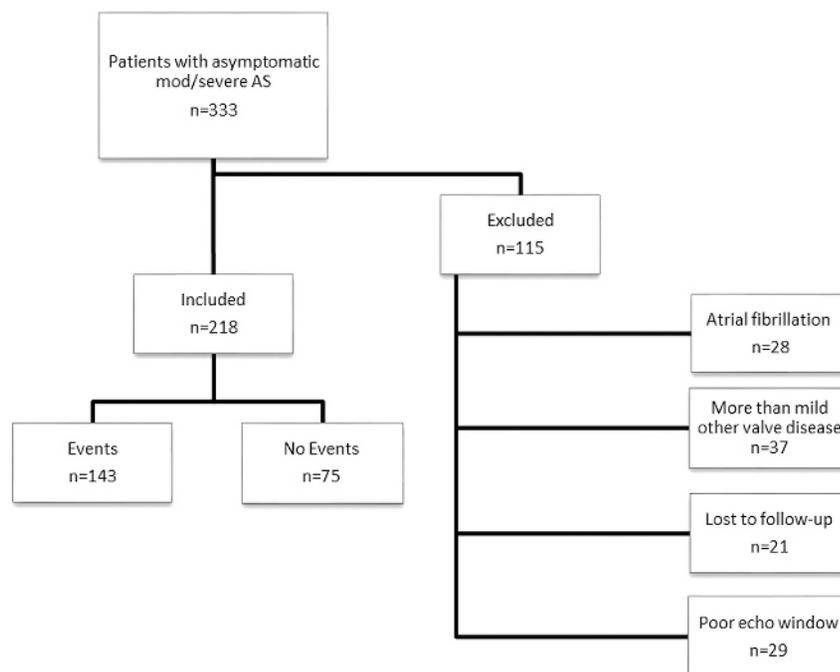


Figure 1
Study population flow chart.

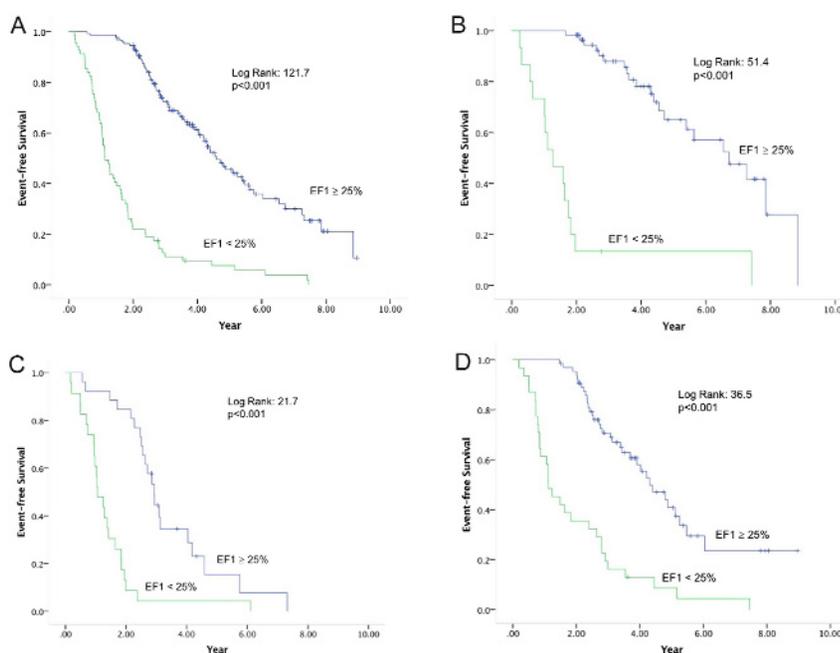


Figure 2
Kaplan–Meier event-free survival curves according to EF1 (cut off value 25%) for (A) total population (n = 218); (B) patients with moderate AS (n = 73); (C) patients with severe AS (n = 49) and (D) discordant (mean pressure gradient <40 mmHg and aortic valve area <1.0 cm², n = 96).

Declaration of interest

The authors declare there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

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