Repeated echocardiographic imaging of aortic stenosis: Real-life lessons

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May 4, 2021

Abstract

Background Timing of aortic valve intervention is dependent on the accuracy and reproducibility of echocardiographic (ECHO) parameters. We aimed to assess haemodynamic subsets of aortic stenosis (AS), their change over time, and variability of ECHO parameters. **Method** This retrospective, longitudinal study compared sequential ECHO over 15 months to identify concordant or discordant aortic valve area (AVA) and mean pressure gradient (MPG). **Results** We included 143 patients with a mean age of 76.0 years. The median length of time between studies was 112 days (IQR 38-208). Initially participants were classified as 10 (7.0%) mild, 49 (34.3%) moderate and 84 (58.7%) severe AS. In 80 (55.9%) AVA and MPG were concordant; stroke volume index (SVi) was <35ml/m2 in 53 (74.6%). AS severity was downgraded in 33 (23.1%) patients. MPG was most consistent and AVA was the least consistent between successive investigations (intraclass correlation coefficients R=0.86 and R=0.76, respectively). Even small variations in left ventricular outflow tract (LVOT) measurement of 1 standard deviation reclassified up to 67% of participants from severe to non-severe. **Conclusion** Almost half of patients with AS have valve area/gradient discordance. Variations in LVOT diameter measurement commensurate with clinical practice reclassified AS severity in up to 2/3 of cases. Change in AS severity should only be accepted following careful scrutiny of all available ECHO data.

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