TOO MUCH CALCIUM, TOO LITTLE GRADIENT: AN UNUSUAL CASE OF LOW GRADIENT AORTIC STENOSIS

Poster Contributions
Poster Hall B1
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Background: Low flow, low gradient severe aortic stenosis (AS) with preserved ejection fraction is a challenging diagnostic dilemma for clinicians. Understanding of the hemodynamic alterations of the transaortic valvular pressure gradient by additional valvular pathology is necessary to make this diagnosis.

Case: 89 year old female with hypertension and hyperlipidemia presented with new onset severe limiting fatigue and an elevated troponin. A grade 3/6 late peaking systolic murmur and 2/6 diastolic rumble were found on cardiac auscultation. The patient had an echocardiogram which demonstrated mild left ventricular hypertrophy, hyperdynamic left ventricular systolic function with an ejection fraction > 75%, low gradient severe AS (mean gradient 23 mmHg, indexed aortic valve area 0.5 cm2/m2) and functional mitral stenosis (MS) secondary to significant mitral annular calcification with restricted posterior leaflet motion (mean gradient 11 mmHg). Paradoxical low gradient severe AS was suspected and the patient went for cardiac catheterization. She was found to have anomalous coronary circulation with all three coronary arteries arising from the right coronary cusp, and non-obstructive disease. The left ventricular end diastolic pressure was 12 mmHg, and cardiac output by both estimated Fick and thermodilution method was 4.1 L/min. The mean gradient across the aortic valve was 30 mmHg with a calculated area of 0.7 cm2 and an indexed stroke volume of 30 ml/m2 confirming low flow, low gradient severe AS with preserved ejection fraction.

Decision Making: Severe AS was confirmed and the reduction in cardiac output and left ventricular pressure secondary to the functional MS was deemed to be a contributing factor to the paradoxical transaortic valvular pressure gradient. Aortic valve replacement was recommended and she has been referred for transcutaneous aortic valve replacement due to high surgical risk.

Conclusion: This case demonstrates the importance of considering the hemodynamic effects of functional MS in the evaluation of low flow, low gradient AS with preserved ejection fraction.