**INCREMENTAL VALUE OF MRI IN STAGING THE SEVERITY OF AORTIC STENOSIS**

**M. Katayama**, P.M. Panse, C.B. Kendall, J.R. Daniels, J.P. Sweeney, F.D. Fortuin,

M. Belohlavek, H.P. Chaliki

Mayo Clinic, Scottsdale, AZ, USA

*Background:* “Paradoxical low flow low gradient severe aortic stenosis (AS)” is a new category in the ACC/AHA guidelines. The aim of this study was to test if MRI measured stroke volume has an impact on staging the severity of AS.

*Methods:* Thirty-eight patients with AS (mean gradient, MG ≥ 25mmHg) were prospectively enrolled and had echocardiography and cardiac MRI. Previous myocardial infarction, wall motion abnormality, non-sinus rhythms, greater than mild aortic and mitral valvular regurgitation, and left ventricular ejection fraction < 50% were excluded. Grades of AS were determined following guidelines: 1) Severe AS with high gradient (Vmax≥4m/s or mean gradient MG ≥40mmHg), 2) Severe AS with low gradient (aortic valve area (AVA) ≤1cm2 with Vmax<4m/s and MG<40mmHg), and 3) Moderate AS (AVA≥1cm2, Vmax<4m/s, MG<40mmHg). AVA was calculated using continuity equation by echocardiography and also calculated using combined modality, stroke volume (SV) by MRI with Doppler measures.

*Results:*Thirty-five patients were confirmed as same grade of AS by echocardiography and MRI (Table). However,3 patients were re-classified from moderate AS to low gradient severe AS when MRI stroke volume was used. Higher stroke volume by echocardiography was observed in 2 of the 3 reclassified patients due to high left ventricular outflow tract (LVOT) velocity and consequent high time velocity integral.

*Conclusion:* MRI is helpful with determination of SV and staging the severity of AS, in some patients with problematic LVOT flow velocity. Larger studies are needed to confirm our study findings and further define the role of multimodality imaging.

|  |  |  |
| --- | --- | --- |
|  |  | AVA determined by echocardiography |
|  |  | High Gradient AS (Vmax≥4m/s or MG≥40mmHg) | Low Gradient severe (AVA≤1) AS | Moderate AS |
| AVA determined by MRI stroke volume with Doppler measures | High Gradient AS (Vmax≥4m/s or MG≥40mmHg) | 24 | 0 | 0 |
| Low Gradient severe (AVA≤1) AS | 0 | 5 | 3 |
| Moderate AS | 0 | 0 | 6 |