

61<sup>st</sup> Annual Scientific Session & ExpoACC-i2 with  innovation in intervention

## Valvular Heart Disease

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### CONCORDANCE OF VALVE AREA AND PRESSURE GRADIENT IN PATIENTS WITH AORTIC VALVE STENOSIS AND PRESERVED LEFT VENTRICULAR EJECTION FRACTION

ACC Moderated Poster Contributions

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Session Title: Aortic Stenosis: Predictions for Future Management of Disease

Abstract Category: 10. Valvular Heart Disease: Clinical

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**Background:** Recent studies have shown a high frequency of discordance between aortic valve area (AVA) and trans-valvular pressure gradients (PG) in patients (pts) with severe aortic stenosis (AS) and preserved left ventricular ejection fraction (LVEF), thereby questioning the current cutoffs used to define severe AS.

**Methods:** Using the computerized echocardiographic database at our institution, consecutive pts with moderate or severe AS (AVA  $\leq 1.5$  cm<sup>2</sup>) and preserved LVEF ( $\geq 50\%$ ) were identified and the relationship between AVA and mean PG was examined. The characteristics of pts with severe AS (AVA  $< 1.0$  cm<sup>2</sup>) and low PG ( $< 40$  mmHg) were compared to pts with severe AS and high PG ( $\geq 40$  mmHg).

**Results:** During a 3 yr study period, 619 pts fulfilled the inclusion criteria (age  $76 \pm 11$  yr, 40% male; repeat examinations were excluded). Among 265 pts with severe AS, 193 had high PG (73%) and 72 had low PG (27%). Among 354 pts with moderate AS (AVA 1.0-1.5 cm<sup>2</sup>), 303 had low PG (86%) and 51 had high PG (14%). AVA and PG were concordant (high PG in pts with severe AS and low PG in pts with moderate AS) in 496 pts (80%); concordance was similar (77%) when AVA was indexed to body surface area (severe AS defined as AVA  $< 0.6$  cm<sup>2</sup>/m<sup>2</sup>). Pts with severe AS and low PG were older ( $80 \pm 10$  vs  $76 \pm 11$  yr), had a greater frequency of atrial fibrillation during the echocardiographic examination (21% vs 9%), had larger AVA ( $0.86 \pm 0.12$  vs  $0.74 \pm 0.15$  cm<sup>2</sup>) and indexed AVA ( $0.51 \pm 0.08$  vs  $0.42 \pm 0.09$  cm<sup>2</sup>/m<sup>2</sup>) and smaller stroke volume ( $77 \pm 14$  vs  $90 \pm 19$  ml) and relative wall thickness ( $0.41 \pm 0.09$  vs  $0.49 \pm 0.09$ ), compared to pts with high PG (all P values  $< 0.05$ ). There were no differences in gender, body size, heart rate, LVEF, left ventricular (LV) mass, LV outflow tract diameter, right ventricular dysfunction or severe valve regurgitation (aortic, mitral or tricuspid) between the 2 groups.

**Conclusions:** The concordance between AVA and PG in pts with moderate or severe AS is higher than previously reported. The discordance between AVA and PG in pts with severe AS is partial explained by differences in age, heart rhythm, AS severity (less severe AS in pts with low PG), stroke volume (lower stroke volume in pts with low PG), and LV remodeling (less concentric remodeling in pts with low PG).