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Aortic valve calcium score indexed to transaortic valve gradient: A novel hemodynamic and anatomic index for patients with low gradient aortic stenosis.

Ramy Mando

George S Hanzel

Francis Shannon

Ashish Chaddha

Craig Tucker

See next page for additional authors

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Authors

Ramy Mando, George S Hanzel, Francis Shannon, Ashish Chaddha, Craig Tucker, Michael Gallagher, Robert D Safian, and Amr E Abbas



LAS VEGAS, NV
MAY 19-22

Transaortic Valve Gradient: A Novel Hemodynamic and Anatomic Index for Patients with Low Gradient Aortic Stenosis

 Tuesday, May 21, 2019

 10:30 AM - 11:15 AM

 Belmont Ballroom 2-3, 4

Poster Number

II-33

Abstract

Background

Aortic valve calcium score (AVCS) is a marker for aortic stenosis (AS) severity. We sought to evaluate the effect of aortic valve (AV) variables of flow defined by stroke volume index (SVI), area (AVA), and gradient (MG) on AVCS and study the role of AVCS/MG ratio in patients with low gradient AS.

Methods

We retrospectively studied patients undergoing transcatheter aortic valve replacement (TAVR) for severe AS (defined by Echo, Cath, and multimodality team consensus) at our institution from January 1, 2014 through September 1, 2018. AVCS was compared among patient groups defined by their MG (low < or high ≥ 40 mmHg), echocardiographic SVI (low < or normal ≥ 35 mL/m²), and AVA (< 0.8 or ≥ 0.8 cm²) using a three-way factorial ANOVA. The AVCS/MG ratio was developed and compared to AVCS and AVCS/cm² (annular area) to identify severe AS in patients with low gradient. AVCS/MG was developed based on AVSC (AU) 2000 in males, and 1600 in females/ 40 mmHg (50 and 30, retrospectively)

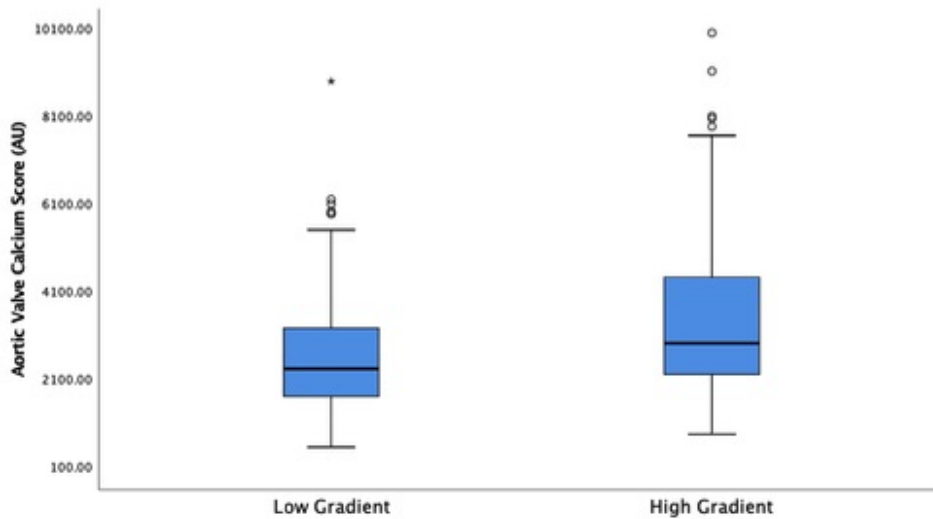
Results

Our analysis included 272 patients. AVCS was significantly higher in patients with high compared to low MG (3414.8 +/- 1819.57, 2596.0 +/- 1385.1, respectively p = 0.00004). There was no difference in the AVCS between normal and low flow (2883.0 +/- 1679.3, 3154 +/- 1679.5, respectively p = 0.188); and small and larger AVA (3098.1 +/- 1642.4, 2871 +/- 1789.8, respectively p = 0.330). In patients with low MG, the index AVCS/MG identified more patients with severe AS compared to AVCS or indexed AVCS to the annulus.

Conclusions

AVCS is significantly higher in those with severe AS and high MG regardless of flow state or AVA. Furthermore, AVCS/MG more accurately predicts severe AS compared to AVCS in LG

AS.

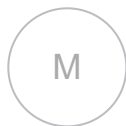


Graphical representation of the distribution of AVCS with respect to gradient. There is a statistically significant difference in AVCS between LG and HG AS ($p = 0.00004$)

Methods Utilized for the Classification of Severe Low Gradient Aortic Stenosis			
Patients with LG AS N = 125	AVCS ¹ Correctly Classified	AVCS/Annular Area ² Correctly Classified	AVCS/MG ³ Correctly Classified
	97/125 (77.6%)	101/125 (80.8%)	118/125 (94.4%)
¹ AVCS \geq 2000 AU in men and \geq 1200 AU in women ² AVCS/cm ² \geq 500 AU/cm ² in men and \geq 300 AU/cm ² in women ³ AVCS/MG \geq 50 AU/mmHg in men and \geq 30 AU/mmHg in women			

AVCS/MG was developed based on AVSC 2000 in males, and 1600 in females/ 40 mmHg. Hence 50 in males and 30 in females. AVCS/MG accurately classified patients with severe low-gradient aortic stenosis in 94.4% of cases.

Presenter



Ramy Mando, MD
Beaumont Health



George S. Hanzel, M.D., FSCAI
William Beaumont Hospital



Francis Shannon, M.D.
Beaumont Health



Ashish Chaddha
Beaumont Health



Craig Tucker, MD
Beaumont Health



Michael Gallagher
Beaumont Health



Robert D. Safian, MD, MSCAI
William Beaumont Hospital



Amr E. Abbas, M.D., FSCAI
Beaumont Health

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