Location and thickness of annulus calcification predicts paravalvular aortic regurgitation after TAVI. Standardized segmentation of aortic annulus through multimodality imaging techniques

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Since TAVI involves multimodality imaging to screen patients it is highly important to standardize the report and the analysis process of the AO valve.

Our aim.— To explore whether the precise location of the annulus calcifications could predict periprosthetic aortic regurgitation (PAR) after TAVI.

Method.— We propose a standardized aortic annulus description based on a “clock” segmentation. Cardiac CT was performed in 49 patients before and after TAVI and compared to the echo after TAVI. Aortic Anulus was divided into 12 quadrants. Six o’clock was defined as the insertion of interatrial septum on the aortic annulus. The calcific protrusion was assessed as the thickness of calcific annular apposition.

Results.— Number of patients with PAR ≥ 2: 18/49 (36%) of which patients with two or more PAR (non-adjacent): 50% (9/18).

The thickness of the protrusive calcific annular apposition correlates with the grade of the AO regurgitation.
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in less than one third of cases and proposed examinations were often inappropriate.

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Comparisons of the new EuroSCORE II with the logistic EuroSCORE and the Society of Thoracic Surgeons score — implications for transcatheter aortic valve implantation
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Background.— The logistic EuroSCORE (logES) and the Society of Thoracic Surgeons (STS) scores are commonly used to select high-risk patients for Transcatheter Aortic Valve Implantation (TAVI) but their validity in patients with valvular heart disease has been questioned. The EuroSCORE II (ESII) was elaborated to improve risk assessment but comparisons with logES and STS scores are rare and no threshold has been proposed to define high-risk patients.

Methods.— In 272 patients with severe symptomatic aortic stenosis who underwent a TAVI at our institution we compared the three scores.

Results.— The ESII was lower and moderately correlated to the logES (9 ± 8% vs. 23 ± 14%, P < 0.01; r = 0.61, P < 0.001) and not different but poorly correlated to the STS (10 ± 9%, P = 0.10; r = 0.25, P < 0.001). Based on recommended thresholds defining high-risk patients (LogES ≥ 20% or STS ≥ 10%), area under the curve of the ROC analysis was 0.81 for the logES and 0.67 for the STS and an ESII of 7% provided the best diagnostic value. However, contingency analyses showed that agreement between the ESII and the logES was moderate (kappa = 0.44) with a risk assessment different in 76 patients (28%) and agreement with the STS score was poor (kappa = 0.27) with a risk assessment different in 99 patients (36%).

Conclusions.— A ESII threshold of 7% may be used to identify high-risk patients but correlations and agreements between the scores were only modest. Our results highlight the limits of current scoring systems and reinforce the ESC Guidelines stressing the importance of the clinical judgment of a heart team in addition to a combination of scores.

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