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Topic 2: Valvular diseases, prostheses, endocarditis

Thursday, June 13, 2019 — 10h00—11h00

Poster n°1

Improvement of the PISA method in the setting of mitral regurgitation of complex geometry

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Introduction Doppler echocardiographic methods, such as proximal isovelocity surface area (PISA) are used to quantify mitral regurgitations (MR). However, their accuracy and reproducibility are still discussed, especially in case of MR of complex geometry. The aim of this study was to test in-vitro the accuracy of the PISA method depending on the shape and number of regurgitant flows.

Method Several regurgitant volumes (RV) were produced through various regurgitation severities and shapes in a left heart double activation simulator. Central and oblong MR were performed by suturing the extremity of a bioprosthesis leaflet to the annulus. Multiple jets regurgitation was performed by suturing centrally the two leaflets of an anatomically shaped mitral valve made of hydrogel. A transesophageal echocardiography probe was used to acquire the data. The RV was calculated with the classical PISA method (hemispheric assumption), or by considering the PISA as a hemicylinder or a double hemisphere. It was then compared to a reference value obtained from an electromagnetic flowmeter measurement (accuracy $\pm$ 2 ml/min).

Results For a central jet, the hemispheric assumption best estimated the RV (bias -3.5 ± 14.8 ml, $P = 0.10$). Oblong MR was underestimated with hemispheric assumption (-18.3 ± 14.9 ml, $P < 0.01$) whereas hemicylindrical assumption was more accurate (-0.2 ± 5.8 ml, $P = 0.85$). In case of 2 regurgitant jets, considering only the largest jet led to an important underestimation (-10.9 ± 5.6 ml, $P < 0.01$), whereas adding the two RV was more accurate (-1.2 ± 8.2 ml, $P = 0.50$).

Conclusion In case of a single central orifice, the hemispheric assumption correctly quantified the MR. In case of an oblong orifice, the hemicylindrical assumption provided a good quantification with simple measurements. In case of multiple jets of different sizes, it was more accurate to consider both jets for RV calculation.

Disclosure of interest The authors have not supplied their declaration of competing interest.

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Poster n°2

Natural history and outcome of adults with bicuspid aortic valve: A middle-aged French cohort of 541 patients

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Introduction No data are available on the natural history and outcomes of middle-aged European patients with bicuspid aortic valve (BAV), as the only 2 large studies were conducted on young adults in Canada and north America. We aim to determine the frequency of cardiovascular events and to assess the survival relative to that of the general population in a large consecutive series of adults diagnosed with BAV in our echocardiographic laboratory according to the presence or the absence of a valvular and/or vascular surgical indication at the time of diagnosis.

Method Between 2005 and 2017, 350 patients without surgical indication (medical group, mean age 53 years, 71% of men) and 191 patients with surgical indication (surgical group, mean age 59, 71% of men) at baseline have been included. Median follow-up was 80 [32—115] months.

Results In the medical group, 34 deaths (9.7%) were recorded (10 cardiovascular-related). The 5-years and 10-years survival rate were respectively $93 \pm 1\%$ and $88 \pm 2\%$ with a relative survival of BAV patients compared to the age-and-sex-matched population of 98.8%. Nine patients (2.6%) were diagnosed with infective endocarditis (IE) and no aortic dissection occurred. Aortic valve and/or ascending aorta surgery was performed in 102 patients (29%) during follow-up. In the surgical group, 12 deaths (6.3%) were recorded (5 cardiovascular-related). The 5-years and 10-years survival rate were respectively $97 \pm 1\%$ and $90 \pm 3\%$ with a relative survival of BAV patients compared to the age-and-sex-matched population of 99.2%. Five patients (2.6%) were diagnosed with IE and no aortic dissection occurred.

Conclusion In BAV, survival rates are not lower than for the general population. The rate of IE is low and no aortic dissection occurred in our study. Middle-aged adults with BAV have a