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Threshold of predictive SPAP dyspnea in mitral stenosis with Doppler cardiac stress at maximum effort
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Background: A Doppler cardiac stress of mitral stenosis (MS), the threshold of the systolic pulmonary artery pressure (SPAP) at the peak of the effort proposed by the American Recommendations (AHA / ACC) for mitral dilation is 60 mmHg. However, this value is questioned in the literature

Objective: To stress test on a treadmill (30Watts/3min). Dyspnea was present in patients of functional class I, II, III NYHA and SPAP ≤ baseline and at the end of each level to the peak of the effort.

Methodology: Fifty-one patients with primary MR in sinus rhythm were prospectively enrolled. RF was calculated using either 2DE or 3DE LV volumes obtained as follows: (LV total stroke volume – LV forward stroke volume by Doppler) / LV total stroke volume. Severity of MR was graded independently using an integrative approach, as recommended by current guidelines.

Results: The 3D method had a feasibility of 89%. A significant correlation was observed between grade of MR severity and 3D RF (r=0.84, P<0.0001) and 2D RF (r=0.74, P<0.0001). The area under the ROC curves for ≥3+ or 4+ MR was 0.99 for 3DRF and 0.94 (0.83 to 0.99) for 2D RF. All patients with 3DRF ≥40% had ≥3+ or 4+ MR and all patients with 3DRF ≤50% had 1+ or 2+ MR with a “grey” overlap zone between 30 and 40%.

Conclusions: RF can be routinely determined using 3D LV volumes with a high feasibility in patients with primary MR and is reliable for identification of severe MR. This 3D method should be included in the currently recommended multiparametric integrative approach.

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Assessment of tricuspid annulus shape and orientation using three-dimensional transesophageal echocardiography
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Background: The tricuspid annulus (TA) is a complex structure that has been rarely evaluated. Three-dimensional transesophageal echocardiography (3D-TEE) gives us the unique opportunity to evaluate TA shape and dimensions.

Methods: Three-dimensional volumetric data of the TA were acquired by TEE using a matrix array transducer (X7-2t, Philips) in 184 patients. Multiplanner reconstructions were performed offline using a dedicated software (QLab7, Philips). Long-axis (LA) diameter, short-axis (SA) diameter and the area of the TA at the time of its maximal opening were measured. The eccentricity index (EI) of the TA was defined as LA:SA and TA orientation as the angle between the interatrial septum axis (aortic valve on the top at 0°) and the LA in the surgical view.

Results: Morphology of TA was more often oval (EI=1.35±0.22) but shapes were significantly different among individuals, from circular to oval (EI values from 1 to 2.15). TA dilatation occurred homogeneously in all the directions of the right ventricle free wall as attested by the very good correlation between the TA area and both LA (r=0.89, p<0.0001) and SA (r=0.88, p<0.0001). TA dilatation, as shown by increase in TA area, was associated with a small decrease of EI (r=0.21, p<0.0001), thus a trend to a more circular TA. All orientations of TA were observed, from 5 to 175° (mean=87±57°) with a bimodal distribution (most frequently at 40° and 150°).

Conclusion: 3D-TEE allowed a good assessment of the TA shape and orientation, which is significantly different among individuals. This method could be interesting to improve assessment of TA dilatation before left-heart valve surgery.