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Right ventricular basal diameter, but not volume, can predict severe tricuspid regurgitation

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Background. According to current EACVI guidelines, right ventricle (RV), tricuspid anulus (TA) and right atrium (RA) dilatation are supportive signs to identify severe functional tricuspid regurgitation (TR) by echocardiography. However, the ranking by which those parameters should be considered to identify severe TR remains to be clarified.

Purpose. Accordingly, the aim of this study is to compare RV, RA and TA association with severe TR and to rank them in order of importance to predict severe TR.

Methods. 302 patients (59 ± 13 years, 54 % women) with functional TR underwent two- and three-dimensional echocardiography. Using the nonparameteric Variable Importance (VIMP) software package, we assessed the relative importance of 6 differerent parameters (indexed by body surface area) to identify severe TR: 3D RV end diastolic volume (RVEDVi), 3D RV end systolic volume (RVESVi), 3D RA max volume (3DRAi), 2D RA systolic volume (3DRAi), 2D RV basal diameter (2DRVdi) and 2D TAi measured in the apical 4-chamber view.

Results. According to EACVI multiparametric approach, 50/302 pts (17%) were found to have severe TR. 3DRAi (VIMP = 0.075) was the most important predictor of severe TR. 2DRVdi (VIMP= 0.005) was the second most important parameter and was the only parameter of RV dilation (RVEDVi= -0.0011 and RVESVi= -0.0012) associated to severe TR. Also, 2DRAi (VIMP= 0.023), and 2D TAi (VIMP= 0.004) showed good predictive ability.

Conclusions. Among the various right heart structures undergoing remodeling in patients with functional TR, RA dilation was the most important predictor of severe TR. Also the RV basal diameter, but not the volumes, was a predictor of severe TR. This underlines the importance of the shape, more than the volume of the RV as a predictor of severe TR.