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VALUE, DISTRIBUTION, AND CORRELATION OF RIGHT VENTRICULAR END-DIASTOLIC VOLUME INDEX: A REAL-TIME 3-DIMENSIONAL ECHOCARDIOGRAPHY STUDY

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Objectives The volumetric evaluation and correlations of the right ventricle (RV) with real time 3-dimensional echocardiography (RT3DE) in a large cohort of patients have not been previously described.

Methods This retrospective study comprised a review of 806 consecutive RT3DE examinations with quantitative evaluation of both the left and right ventricle. Examinations were excluded from analysis if there was disese or surgery that would directly affect the size of the RV (eg, intracardiac shunt, significant tricuspid or pulmonic regurgitation, etc) as well as poor ultrasound image quality, leaving a total of 701 studied for analysis. RV volumetric quantification was performed for all data using dedicated software.

Results Linear regression analysis showed that left ventricular stroke volume index (LVSVI) significantly correlated with RV end-diastolic volume index (RVEDVI)($r=0.78$, $p<0.0001$). Overall, 4% (28 of 701) of the patients had RVEDVI lower than 50 ml/m^2, 12% (84 of 701) of the patients had RVEDVI greater than 100 ml/m^2, and the rest of the patients were within 50 to 100 ml/m^2. Intraobserver and interobserver variability study demonstrated RV volumetric parameters were highly reproducible.

Conclusions RT3DE is an accurate and robust technique for quantifying RV volume. In patients without known primary RV pathology, RV volume strongly correlated with left ventricular stroke volume.