

Added predictive value of right ventricular ejection fraction compared with conventional echocardiographic measurements in patients who underwent diverse cardiovascular procedures

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Background

Right ventricular (RV) ejection fraction (EF) assessed by 3D transthoracic echocardiography (TTE) is a powerful measure to detect RV dysfunction. However, its prognostic value in routine clinical practice has been scarcely explored. Accordingly, we aimed at investigating whether RVEF is associated with 2-year all-cause mortality in patients who underwent diverse cardiovascular procedures and to test whether RVEF can overcome conventional TTE parameters in terms of outcome prediction.

Methods

174 patients were retrospectively identified who underwent clinically indicated TTE comprising 3D acquisitions. The patient population consisted of heart failure with reduced ejection fraction patients (44%), heart transplanted patients (16%), and severe valvular heart disease patients (39%). Beyond conventional echocardiography measurements, RVEF was quantified by 3D-TTE. The primary endpoint of our study was all-cause mortality at two years.

Results

24 patients (14%) met the primary endpoint. Patients with adverse outcomes had significantly lower RVEF (alive vs. dead; 48 ± 9 vs. $42\pm 9\%$, $p<0.01$). However, tricuspid annular plane systolic excursion (21 ± 7 vs. 18 ± 4 mm), and RV systolic pressure (36 ± 15 vs. 39 ± 15 mmHg) were similar. By Cox analysis, RVEF was found to be associated with adverse outcomes. By receiver-operator characteristic analysis, RVEF exhibited the highest AUC value compared with the other RV functional measures.

Conclusions

Conventional TTE measurements may be inadequate to support a granular risk stratification in patients who underwent different cardiac procedures. RVEF may be a robust clinical parameter, which is significantly associated with adverse outcomes