TRICUSPID REGURGITATION DURATION CORRELATES CARDIAC MAGNETIC RESONANCE IMAGING-DERIVED RIGHT VENTRICULAR EJECTION FRACTION IN PATIENTS WITH PULMONARY ARTERY HYPERTENSION

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Background: Right ventricular dysfunction is closely related to prognosis in patients with pulmonary artery hypertension (PAH). The decreased tricuspid regurgitation duration (TRDc) in transthoracic echocardiography (TTE) recently is known to be associated with increased right atrium pressure and right ventricular filling pressure. The purpose of the present study was to investigate whether TRDc correlates with hemodynamic parameters in cardiac magnetic resonance imaging (CMRI) in patients with PAH.

Methods: Thirty consecutive PAH patients (20% male, age 46.7±13.6 years old) underwent TTE, CMRI within 48 hours. TRDc, tricuspid annular plane systolic excursion (TAPSE) and tricuspid valve lateral annular velocity (TVS') were measured in TTE and right ventricular ejection fraction (RVEF), right ventricular end systolic volume (RVESV) were in CMRI. TRDc was defined as TR duration√(RR interval).

Results: Mean TAPSE, TVS', Tei index, TRDc and RVEF, RVESV were 14.0±7.6mm, 10.7±3.0cm/s, 0.48±0.14, 404±100ms and 41.0±14.9%, 123.9±64.3ml. In correlation analysis, TRDc was significantly associated with RVEF (r=0.463, p=0.010), TAPSE (r=0.366, p=0.046), TVS' (r=0.412, p=0.024) and right ventricular end systolic volume (r=-0.409, p=0.025) not Tei index. However, only TVS' (beta-coefficient=0.431, p=0.024) was significantly associated with RVEF after adjusting age, body surface area and other echocardiographic parameters in multiple regression analysis.

Conclusions: TRDc correlates with CMRI-derived RVEF. Therefore, it could be an echocardiographic surrogate marker for predicting RV dysfunction and prognosis in patients with PAH.