CORRELATION OF RIGHT VENTRICULAR EJECTION FRACTION AND TRICUSPID ANNULAR PLANE SYSTOLIC EXCURSION BY ELECTROCARDIOGRAM-GATED 320 SLICE CT IN PULMONARY HYPERTENSION

ACC Poster Contributions
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Background: There is a strong correlation between right ventricular ejection fraction (RVEF) and tricuspid annular plane systolic fraction (TAPSE) determined by echocardiography in subjects with pulmonary hypertension (PH). However, it is unknown whether there is a correlation between RVEF and TAPSE determined by 320-slice CT. We tested whether TAPSE measured by enhanced ECG-gated conventional 320-slice CT correlates with RVEF and correlates with pulmonary arterial pressure (PAP) and pulmonary vascular resistance (PVR) obtained by right heart catheterization (RHC) in PH subjects.

Methods: 42 subjects (12 male, 57±12 yrs) with PH (26 chronic thromboembolic pulmonary hypertension and 16 pulmonary arterial hypertension) underwent enhanced retrospective ECG-gated conventional 320-slice CT (Aquilion ONE, Toshiba) and RHC. CT images were reconstructed every 5% from 0-95% of the R-R interval and a series of apical 4-chamber images. TAPSE was measured from systolic displacement of the RV freewall and tricuspid annular plane junction. RV end-systolic and end-diastolic true volumes were measured from 3-dimensional reconstruction and used to calculate RVEF.

Results: TAPSE and RVEF were 14.9±3.6mm and 46.1±12.6%, respectively. In RHC, mean PAP (mPAP) and PVR were 42±11 mmHg and 673±344 dyne∙sec∙cm⁻², respectively. The correlation coefficient of TAPSE with RVEF was 0.81 (P<0.001). The correlation coefficients of TAPSE with mPAP and PVR were 0.67 (P<0.001) and 0.62 (P<0.001), respectively.

Conclusions: TAPSE by ECG-gated 320-slice CT correlated strongly with RVEF and significantly with mPAP and PVR acquired by RHC in subjects with PH.