DETECTION OF RV WALL MOTION ASYNERGY ON 4D CT IMAGES USING RV DIAMETER ON TRANSTHORACIC ECHOCARDIOGRAM AND SERUM BRAIN NATRIURETIC PEPTIDE IN SUBJECTS WITH PULMONARY HYPERTENSION

Poster Contributions
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Background: Right ventricular (RV) wall motion asynergy may be a significant predictor of subjects with pulmonary hypertension (PH). We tried to detect four dimensional (4D) CT image based RV wall motion asynergy in PH subjects.

Methods: A total of 62 PH subjects (16 males; 55 ± 16 yrs; 45 chronic thromboembolic PH (CTEPH) subjects who underwent conventional non-surgical medical therapy; and 17 pulmonary arterial hypertension (PAH) subjects) underwent retrospective ECG gated 320 slice CT and TTE. CT images were reconstructed every 5% of R-R interval of ECG and 4D images were obtained to detect RV wall motion asynergy.

Results: RV wall motion asynergy was observed in 33 subjects (53%) on CT (CTEPH 58%; PAH 41%; P=0.24). RV end diastolic (EDD) and end systolic diameter (ESD) (mm) on TTE and serum brain natriuretic peptide (BNP) (pg/ml) were significantly greater in subjects with RV wall motion asynergy than in those without asynergy (all P<0.001). ROC curves of RV EDD, RV ESD, and BNP showed an AUC of 0.85, 0.89, and 0.75, respectively. The best cutoff points of 37.5 (sensitivity of 91% and specificity of 66% for RV EDD, P<0.001), 31.5 (sensitivity of 82% and specificity of 83% for RV ESD, P<0.001), and 78 (sensitivity of 70% and specificity of 76% for BNP, P=0.001) were used to distinguish subjects ± RV wall motion asynergy.

Conclusion: RV size on TTE and serum BNP indicated the presence of RV wall motion asynergy on 4D CT images in PH subjects. RV wall asynergy and RV dilation may be similar and correlated phenomena in PH subjects.