Title: Correlation of ECG-gated 320-row multidetector computed tomography measurement of pulmonary arterial distensibility with hemodynamic factors in chronic thromboembolic pulmonary hypertension

Body: Purpose: We aimed to study correlation of pulmonary arterial distensibility on ECG-gated 320-row multidetector computed tomography (MDCT) with hemodynamic factors in chronic thromboembolic pulmonary hypertension (CTEPH). Materials and Methods: 52 subjects (16 male, 60±12 yrs) with CTEPH underwent ECG-gated 320-row MDCT and RHC. We measured the maximum and the minimum of the cross sectional area (CSA) of main pulmonary artery (MPA), right pulmonary artery (RPA) and left artery (LPA) during one heartbeat. We calculated each distensibility as dividing the remainder between maximum CSA and the minimum CSA by the minimum CSA at percentage. The correlation of each pulmonary arterial distensibility and hemodynamic data obtained by RHC were evaluated. Results: MPA distensibility, RPA distensibility and LPA distensibility were 16.4±7.2%, 14.4±7.7% and 10.2±5.2%, respectively. Mean pulmonary arterial pressure (mPAP), systolic pulmonary arterial pressure (sPAP), diastolic pulmonary arterial pressure (dPAP) and pulmonary vascular resistance (PVR) were 42±11mmHg, 75±20mmHg, 22±8mmHg and 702±278dyne•sec•cm⁻⁵, respectively. The correlation coefficients of MPA distensibility with mPAP, sPAP, dPAP and PVR were -0.540 (P<0.001), -0.459 (P<0.001), -0.427 (P=0.002) and -0.553 (P<0.001), respectively. RPA distensibility and LPA distensibility were modestly correlated with mPAP, sPAP and PVR, respectively. Conclusions: Pulmonary arterial distensibility on ECG-gated 320-row MDCT correlates with mPAP, sPAP, dPAP and PVR in subjects with CTEPH.