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BALLOON PULMONARY ANGIOPLASTY IMPROVES RIGHT VENTRICULAR THE PARAMETER OF DIASTOLIC FUNCTION IN PATIENTS WITH INOPERABLE CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

Poster Contributions
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Background: Right ventricular (RV) function is an important predictor in the course of chronic thromboembolic pulmonary hypertension (CTEPH). Recently, balloon pulmonary angioplasty (BPA) has been reported to improve hemodynamics and functional capacity in patients with CTEPH. However, there are no reports whether BPA improves the right ventricular systolic and diastolic functions. We prospectively investigated whether BPA in patients with inoperable CTEPH improves the right ventricular systolic and diastolic functions with cardiac echocardiography.

Methods and Results: We studied 30 consecutive patients with inoperable CTEPH (9 males and 21 females, mean age 67.4±0.6 [SD] years) who underwent BPA. Their mean right ventricular ejection fraction was 38.6% (range, 24.0-38.8%) by magnetic resonance imaging. All patients underwent clinical and laboratory examination, standard echocardiography completed by the Doppler tissue imaging (TDI) of the tricuspid valve annular motion from the apical 4-chamber view, and the right-sided heart catheterization (RHC) before and after BPA. We compared these parameters between before and after BPA. BPA significantly reduced mean pulmonary arterial pressure (PAP) (34.9±12.5mmHg vs. 28.9±7.9mmHg, p<0.001), and significantly improved stroke volume (55.1±19.8ml vs. 64.6±22.3ml, p<0.005). There were similar volume status before and after BPA (right atrial pressure, 2.3±1.9mmHg vs. 2.0±1.2mmHg, p=0.42). In RV systolic functional parameters, tricuspid annular plane systolic excursion (TAPSE), peak systolic tricuspid annular velocity (Sa) and fractional area change (FAC) were not significantly different between before and after BPA (TAPSE, 18.1±4.0mm vs. 18.6±5.0mm, p=0.46, Sa, 11.3±2.4cm/sec vs. 11.8±3.4cm/sec, p=0.56, FAC, 29.8±12.9% vs. 28.9±10.9%, p=0.42). However, in RV diastolic functional parameters, only peak early diastolic tricuspid annular velocity (Ea) significantly improved after BPA (6.8±2.2cm/sec vs. 7.8±2.5cm/sec, p<0.005).

Conclusion: This study suggests that BPA in patients with inoperable CTEPH improved not only mean PAP and stroke volume but also the parameter of RV diastolic function.