

RIGHT VENTRICULAR REVERSE REMODELING AFTER BALLOON PULMONARY ANGIOPLASTY IN PATIENTS WITH INOPERABLE CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

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Background: Balloon pulmonary angioplasty (BPA) has been reported to restore hemodynamics and functional capacity, with an acceptable risk, in patients with chronic thromboembolic pulmonary hypertension (CTEPH), who are not candidates for pulmonary endarterectomy. However, right ventricular (RV) function, an important predictor in CTEPH, remains to be examined. We aimed to examine the impact of BPA on RV remodeling and dysfunction relative to hemodynamic improvements in patients with inoperable CTEPH. **Methods:** We studied 20 consecutive patients with inoperable CTEPH who underwent a series of BPA (3.2 ± 0.9 procedures) with cardiovascular magnetic resonance (CMR) before and at a mean of 4.0 ± 0.8 months after BPA. **Results:** BPA led to significant amelioration of the mean pulmonary arterial pressure (39 ± 8 to 27 ± 9 mmHg), cardiac index (CI), and pulmonary vascular resistance (PVR, 889 ± 365 to 490 ± 201 dyne sec/cm⁵) (all $P < 0.05$), without death or major complications including severe reperfusion pulmonary edema. Moreover, BPA significantly improved right-sided heart failure symptoms and signs, and exercise capacity (all $P < 0.001$). CMR revealed a marked improvement in RV end-diastolic volume index (RVEDVI, 130 ± 52 to 92 ± 24 ml/m²) and end-systolic volume index (RVESVI), with concomitant improvements in RV ejection fraction, RV mass, and interventricular septal bowing after BPA (all $P < 0.001$). Changes in RV volumes (RVEDVI and RVESVI) strongly correlated with those in CI and PVR ($R = 0.62-0.74$, all $P < 0.01$). **Conclusions:** BPA induced RV reverse remodeling and improved systolic dysfunction safely by ameliorating hemodynamics in patients with inoperable CTEPH.