

BALLOON ANGIOPLASTY IN CTEPH PATIENTS DENIED THROMBENDARTERECTOMY

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Objective: CTEPH is a leading cause of precapillary pulmonary hypertension. While the evidence for beneficial effects of medical therapy is limited, pulmonary thrombendarterectomy (PTEA) is considered the treatment of choice. In patients not eligible for PTEA, we performed balloon pulmonary angioplasty (BPA). Effect parameters included hemodynamics, functional capacity, biomarkers and survival.

Methods: Sixteen patients with CTEPH (8 females), aged 60±10 years, underwent BPA. Baseline evaluation included computed tomography and angiography of pulmonary arteries, right heart catheterization, functional capacity (NYHA class and peak VO₂), and blood samples with natriuretic peptides (NT-proBNP). Multiple PBAs were performed with ≥ 48 hours surveillance. Follow up investigations were undertaken 3 months after the last PBA.

Results: With a total of 52 procedures, number of BPA treatment sessions per patient was 3.3±1.4, with intervention on 74 segmental and 143 subsegmental arteries. Significant improvements at follow up vs. baseline included hemodynamics: MAP 36±8 mmHg vs. 46±8 mmHg (p=0.001), cardiac output 5.1±2.0 L/min vs. 4.6±1.6 L/min (p=0.011), pulmonary vascular resistance 6.6±3.3 WU vs. 9.6±3.9 WU (p=0.001), heart rate 72±9 beats/min vs. 77±12 beats/min (p=0.047), arterial oxygen saturation 93±4 % vs. 90±5 % (p=0.017); functional capacity: NYHA functional class 2.0±0.3 vs. 3.0±0.3 (p=0.001), peak VO₂ 16.2±5.8 ml/kg/min vs. 13.5±5.0 ml/kg/min (p=0.006); and biomarkers: NT-proBNP 109±129 µmol/L vs. 213±172 µmol/L (p=0.028). With a mean follow up of 42±29 months, 13 patients remained alive. Three deaths occurred 2 hours, 2 weeks and one year after PBA due to acute right heart failure, a new thromboembolic event and chronic right heart failure, respectively. Reperfusion edema reversed with diuretics followed 5 treatment sessions.

Conclusion: Our results, consistent with one previous similar sized report, suggest that PBA might be an alternative form of treatment in selected CTEPH patients denied surgery. This interventional technique warrants randomized comparison with medical therapy.