

## **Impact of Percutaneous Transluminal Pulmonary Angioplasty for CTEPH with Residual Pulmonary Hypertension after Endarterectomy**

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**Objectives:** Generally, conventional powerful therapy for the patients with chronic thrombo-embolic pulmonary hypertension (CTEPH) is pulmonary endarterectomy (PEA). However, PEA has had an issue about residual pulmonary hypertension after PEA. Recently, percutaneous transluminal pulmonary angioplasty (PTPA) has been noted as a new therapy for distal type CTEPH. The objective of this study was to investigate the efficacy of PTPA for residual pulmonary hypertension after PEA. All data were expressed by median [25<sup>th</sup> – 75<sup>th</sup> percentile].

**Methods:** The consecutive patients with CTEPH who underwent PTPA at our institution were 108 patients. Residual pulmonary hypertension was defined as 25 mmHg of mean pulmonary arterial pressure (PAP) or higher. Twelve out of overall had the residual pulmonary hypertension after PEA. Hemodynamic parameters including PAP, pulmonary vascular resistance (PVR), and cardiac index (CI) at baseline, after PEA and after PTPA were compared in twelve patients. Patients underwent classification according to location of balloon-dilated lesions as follow; Type 1, dilated lesions in the main lobar pulmonary arteries; Type 2, more than 50% of dilated lesions in the segmental arteries; Type 3, more than 50% of dilated lesions in the sub-segmental branches; Type 4, main lesions that branch from the sub-segmental branches.

### **Results:**

Numbers of Type 1, 2, 3 and 4 were 0 (0%), 4 (33%), 7 (58%) and 1 (8%), respectively. 11 out of 12 patients (median age: 56 [49 - 64] years old, male/female: 2/ 10, the numbers of PTPA session per a person: 4.0 [2.0 - 6.5])

completed the follow-up right heart catheterization after PTPA. PAP and PVR significantly improved after PTPA (baseline vs. after PEA vs. after PTPA; PAP: 50 [43-67] vs. 41 [27-46] vs. 21 [17-30] mmHg,  $p < 0.05$ ; PVR: 15.0 [8.5 – 17.0] vs. 6.6 [4.4 – 10.0] vs. 3.1 [1.9 – 4.1] wood unit;  $p < 0.01$ ; CI: 2.1 [1.6 – 2.7] vs. 2.5 [2.1 – 2.9] vs. 2.7 [2.4 – 3.4],  $p = \text{NS}$ , baseline vs. after PEA: no significant change in all hemodynamic parameters).

**Conclusions:** PTPA was also effective to the patients with residual pulmonary hypertension after PEA. PTPA could become a common therapeutic strategy for residual pulmonary hypertension after PEA.