

**A New Era of Therapeutic Strategies for CTEPH: Contrast Among Pulmonary
Endarterectomy, Percutaneous Transluminal Pulmonary Angioplasty, and
Medical Therapy**

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Objective: Pulmonary endarterectomy (PEA) is established for the treatment of chronic thromboembolic pulmonary hypertension (CTEPH). Recently, percutaneous transluminal pulmonary angioplasty (PTPA) has been added for peripheral-type CTEPH, whose lesions exist in segmental, subsegmental, and more distal pulmonary arteries. A shift in clinical practice of interventional therapies occurred in 2009 (first mainly PEA, later PTPA). We examined the latest clinical outcomes of patients with CTEPH.

Methods: This study retrospectively included 161 patients with CTEPH. Twenty-five were treated only with drug (Drug-group), and the other 136 underwent interventional therapies (Interventions-group) (40 underwent PEA [PEA-group] and 96 underwent PTPA [PTPA-group]). Clinical outcome and hemodynamic changes among three groups were compared.

Results: Total 330 PTPA sessions (failures, 0%; mortality rate, 1.0%) was performed in the PTPA-group (complications: reperfusion pulmonary edema, 6.4%; hemoptysis or hemothysis, 8.5%; vessel dissection, 2.1%). Although baseline hemodynamic parameters were significantly more severe in the Interventions-group, the outcome after the diagnosis was much better in the Interventions-group than in the Drug-group (98% vs. 66% 5-year survival, $p < 0.0001$). Hemodynamic improvement in the PEA-group was a 46% decrease in mean pulmonary arterial pressure (PAP) and a 56% decrease in total pulmonary resistance (TPR) (follow-up period; 101.1 ± 36.0 months), while those in the PTPA-group were a 40% decrease in mean PAP and a 58% decrease in TPR (follow-up period; 40.5 ± 30.6 months). The 2-year survival rate in the Drug-group was 80.0%, and the 2-year survival rate, occurrence of right heart failure, and

re-vascularization rate in the PEA-group were 97.4%, 2.6%, and 5.1%, and those in the PTPA-group were 98.5%, 3.1%, and 3.1%, respectively.

Conclusion: The patients who underwent interventional therapies had better results than those treated only with drugs. The availability of both of these operative and catheter-based interventional therapies leads us to expect the dawn of a new era of therapeutic strategies for CTEPH.