

Balloon pulmonary angioplasty can be an Alternative Treatment Strategy for the Management of Non-Operable Chronic Thromboembolic Pulmonary Hypertension

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Aims: Pulmonary endarterectomy (PEA) is the standard therapy for chronic thromboembolic pulmonary hypertension (CTEPH); however, up to 40% of patients are non-operable due to distal types of thromboembolism or comorbidities, resulting in poor prognosis. Therefore, we performed balloon pulmonary angioplasty (BPA) for non-operable patients. The aim was to evaluate the efficacy and safety of BPA for non-operable CTEPH patients as well as those of surgical PEA in operable CTEPH.

Methods: Consecutive 64 CTEPH patients were reviewed retrospectively. Twenty-seven operable patients underwent PEA (56.3 ± 14.4 years old, San-Diego type I:11, II:5, III:11, IV:0), and 34 non-operable patients underwent BPA (67.7 ± 11.4 years old, San-Diego type I:0, II:4, III:22, IV:8). BPA was repeated in 1 to 6 sessions to every patient depending on their severity. Three patients did not consent with any invasive procedure because of advanced age.

Results: Although proportion of San Diego classification was different between PEA

and BPA group, both PEA and BPA significantly improved hemodynamics and symptoms similarly, such as a significant increase in cardiac output (CO) and decrease in mPAP and pulmonary vascular resistance (PVR) (Table). Reperfusion pulmonary injury occurred in 3 patients (11.1%) after PEA, and in 27 sessions (27.3%) after BPA with 3 sessions required emergent intubation. The mortality rates of PEA and BPA were 7.4% and 2.9%, respectively (P=NS).

Conclusion: The efficacy and safety of BPA for non-operable cases were similar to those of PEA for operable cases. Most CTEPH patients can be satisfactorily treated by BPA or PEA.

Table.

		Baseline	Post procedure	P value
BPA (n=34)	CO (L/min)	3.47 ± 0.84	4.25 ± 1.12	<0.001
	mPAP (mmHg)	38.9 ± 7.0	21.2 ± 5.6	<0.001
	PVR (dyne/s/cm ⁵)	765 ± 324	285 ± 136	<0.001
	WHO Fc (I/II/III/IV)	(0/4/22/8)	(13/17/3/0)	<0.001
PEA (n=27)	CO (L/min)	3.32 ± 1.07	4.41 ± 1.54	0.006
	mPAP (mmHg)	43.3 ± 10.6	21.7 ± 6.5	<0.001
	PVR (dyne/s/cm ⁵)	781 ± 283	262 ± 123	<0.001
	WHO Fc (I/II/III/IV)	(0/4/15/8)	(14/9/2/0)	<0.001