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Ratio of pulmonary vascular resistance to occluded pulmonary segments as an indicator of operability of chronic thromboembolic pulmonary hypertension lesions

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Objective: The operability evaluation for pulmonary thromboendarterectomy (PEA) in patients with chronic thromboembolic pulmonary hypertension (CTEPH) is always difficult. In this study, we aimed to identify a better indicator of operability in patients with surgically accessible CTEPH lesions.

Methods: Two-hundred-eight patients with surgically accessible CTEPH lesions who underwent PEA at Beijing Anzhen Hospital from March 2001 to February 2014 were retrospectively reviewed. The occluded pulmonary segments (OPS) were assessed by ventilation/perfusion scintigraphy, pulmonary vascular resistance (PVR) was measured by right heart catheterization and the PVR/OPS ratio was calculated.

Results: Seven (3.37%) early deaths occurred in the post-PEA period, six late deaths occurred during the mean follow-up period of 58.3±39.7 months; the five year

actuarial survival rate was 95.1%±3.5%. The PVR/OPS ratios of early and late death after PEA were significantly higher than those of early and late survival, respectively. A PVR/OPS ratio of <100 dyne/s/cm-5/OPS had much better specificity (88.7% vs. 69.2%) and sensitivity (92.3% vs. 38.5%) than did PVR alone in the prediction of early and late survival. The difference between the two areas under their receiver operating characteristic curves reached statistical significance (z test: Z=1.9917, P=0.046).

Conclusion: The PVR/OPS ratio is a better indicator of operability for surgically accessible CTEPH than is PVR alone. Patients with a PVR/OPS ratio of <100 dyne/s/cm-5/OPS have better early and long-term outcomes after PEA.

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