

DETERMINANT OF TOTAL PROCEDURAL NUMBER OF BALLOON PULMONARY ANGIOPLASTY FOR CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

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Objectives: Although balloon pulmonary angioplasty (BPA) could effectively decrease the mean pulmonary arterial pressure (mPAP) in patients with chronic thromboembolic pulmonary hypertension (CTEPH), repeated procedures have been needed to decrease mPAP below 30mmHg in most patients. The objective of the present study was to identify the determinant of total procedural number of BPA in patients with CTEPH.

Methods: Consecutive 146 patients with CTEPH treated with BPA were enrolled. The goal of BPA was to decrease mPAP below 30mmHg. We repeated BPA procedure until the goal was achieved. The patients were divided into two groups based on individual total procedural number, “less than 5 procedures” (n=54) and “more than 5 procedures” (n=92). In each group, baseline data of hemodynamics, blood sample and respiratory function test were analyzed.

Results: Successful decrease of mPAP could be obtained in both group (20.8±4.7 and 23.2±4.8mmHg). Pre-procedural systolic pulmonary arterial pressure (sPAP) and mPAP were significantly lower (65.3±17.7 vs. 83.1±18.2mmHg and 37.3±9.56 vs. 47.2±11.0mmHg, respectively) in “less than 5 procedures” group. Univariate analysis revealed that high sPAP and mPAP was independent and predictive factor for achieving the goal in less than 5 BPA procedures (odds ratio (OR), 1.06; 95% confidence interval (CI), 1.03-1.08; p<0.01 and OR, 1.10; 95% CI, 1.05-1.35; p<0.01, respectively). The area under the receiver-operating-characteristic curve for sPAP was 0.77 (95%CI, 0.69-0.84). A cut-off value of sPAP under 75mmHg demonstrated 73% sensitivity and 70% specificity for predicting less than 5 BPA procedures needed to achieve the goal.

Conclusions: These results indicated that the determinant of the total procedural

number of BPA in treating CTEPH would be the pre-procedural pulmonary arterial pressure. Hemodynamic status of the CTEPH patients with sPAP less than 75mmHg would be effectively improved by less than 5 procedures of BPA.