It was not discrete examination findings but disadvantageous conditions before repair which was related to postoperative pulmonary venous obstruction in patients with simple total anomalous pulmonary venous connection

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Introduction: Pulmonary venous obstruction (PVO) occurs after operation of total anomalous pulmonary venous connection (TAPVC) despite surgeon’s ingenuity. We empirically suppose postoperative PVO (postop-PVO) has relevance to preoperative PVO (examination findings which indicate obstructive lesion). We investigated what preoperative conditions are related to postop-PVO.

Methods: The medical records of 44 TAPVC patients after repair were reviewed (supracardiac 20, infracardiac 14, cardiac 8, and mixed 2). All surgeries were performed by a same operator between 1993 and 2008. We defined PVO as either vertical vein velocity exceeding 2.0 m/s or vertical vein flow being continuous. Patients were divided into two groups: postop-PVO (n=11); no postop-PVO (n=33).

Preoperative conditions influencing postop-PVO were determined. Results: In univariate analysis postop-PVO was related to following factors: prolongation of preoperative respiratory support (> 1 day, 36% vs. 3%; p=0.010), early ages at repair (≤ 12 days, 72% vs. 27%; p=0.012), light body weight at repair (≤ 3.0 kg, 55% vs. 18%; p=0.05), small cardio-thoracic ratio (≤ 0.49, 45% vs. 6%; p=0.067), and inotropic support (27% vs. 6%; p=0.090). After multiple logistic regression analysis postop-PVO was independently associated with an odds ratio of 21.9 (p=0.016) for respirator support on a prolonged time and 6.3 (p=0.032) for light body weight at operation. Following preoperative factors had no relation to postop-PVO, such as type of TAPVC, dimension of left ventricle, echocardiographic PVO, degree of pulmonary congestion, intensity of pulmonary hypertension. Similarly, operative method, and learning level of operator were not significantly related to postop-PVO. If TAPVC patients had no risk factors, only 4% of patients had PVO after repair. However, if TAPVC patients had two or more factors, 75% of patients had postop-PVO. Conclusions: Contrary to our exception, factors which indicated preoperative PVO (small left ventricle, and pulmonary congestion), and even direct evidence of PVO by echocardiograms were not significantly related to postop-PVO. Postop-PVO was associated with bad conditions as pre-operation. Patients with more than two risk factors suffered postop-PVO with high rate. We should mind more than one disadvantage rather than every single finding of examination to predict post-op PVO in patients before TAPVC repair.