

P-107

Pulmonary hypertension is mainly induced by high post-capillary pressure in patients with tetralogy of Fallot after definitive repair

*Hamamichi Y., Horimoto Y., Takeguchi M., Mastui T., Saito M., Ishii T., Inage A., Ueda T., Yazaki S., Yoshikawa T.
Sakakibara Heart Institut, Tokyo, Japan*

Introduction.

We find pulmonary hypertension (PH) uncommonly in patients with tetralogy of Fallot (TOF) after repair. We predicted increased post-capillary pressure, such as pulmonary capillary-wedge pressure (PCWP) and end-diastolic pressure of left ventricle (LVEDP) would be main cause of PH which was induced by LV dysfunction. The purpose of this study is to investigate what factors triggered PH in repaired-TOF patients.

Methods.

The medical records of 95 repaired-TOF patients aged from 7 to 53 years were reviewed. We performed cardiac catheterization to perceive hemodynamic state between 2010 and 2015. We defined PH (n=11) as mean pulmonary-artery pressure 25mmHg or over. First, indexes were determined which would affect PH. Second, we compared cardiac performances of right ventricle (RV) between repaired-TOF patients with and without PH.

Results.

In monovariate analysis PH was associated with 5 factors: PCWP (≥ 16 mmHg, $p<0.01$); LVEDP (≥ 18 mmHg, $p<0.01$); 2 or more shunting from systemic artery to pulmonary artery ($p=0.011$), age at definitive repair (≥ 9.5 years, $p=0.017$); period after definitive repair (≥ 16.0 years, $p=0.043$). Contrary to expectation, small pulmonary-artery size and systemic disease were not connected with PH after surgery. After multivariate analysis PH was independently related to only high PCWP (odds ratio 24.6). Explanatory coefficient was high (0.43). High PCWP had relation to high LVEDP ($p<0.0001$). Of 11 patients with PH, 8 patients (73%) possessed whichever high PCWP or high LVEDP at least. Patients with PH possessed more compressed RV than non-PH patients: increased pressure-ratio of RV to LV on end-systole (0.74 vs. 0.54, $p=0.0043$); increased EDP (13 mmHg vs. 10 mmHg, $p=0.018$); decreased ejection fraction (40% vs. 47%, $p=0.043$).

Conclusion.

Our study showed high post-capillary pressure, such as high PCWP or high LVEDP, mainly provoked PH in repaired-TOF patients. Patients with PH possessed more RV overloads. Intensive RV overloads might lead to high post-capillary pressure through interaction between RV and LV. High post-capillary pressure owing to left heart disease is said to have a bad prognosis and needs shaped medical attention. We should search for PH in repaired-TOF patients with intensive RV overloads to set up therapy for it.