

O14-5

Glenn procedure with additional flow enlarges pulmonary size without extra cardiac-stress

Sonota K., Hamamichi Y., Nukaga S., Komiya E., Ishii T., Kishiki. K., Inage A., Ueda T., Yazaki S., Yoshikawa T.

Sakakibara Heart Institute, Tokyo, Japan

Introduction: We often leave additional flow to pulmonary arteries (PA) in Glenn procedure to grow PA larger. However, additional flow (Add. flow) is suggestive of imposing over-loads against mono-ventricular circulation. We investigated cardiac function and pulmonary circulation in Glenn patients with Add. flow.

Methods: The medical records of 73 Glenn patients were reviewed who were confirmed Add. Flow on cardiac catheterization. Control was 53 Glenn patients who were not confirmed Add. flow. They all underwent cardiac catheterization between 2010 and 2017. We compared cardiac performances and pulmonary circulation indexes between two groups.

Results: Additional flow was reserved by following methods, such as antegrade flow from ventricular outflow tract (30), conduit from right ventricle (29), and shunting from aortic branch (14). All additional flows were lessened by narrowing their tracts. Study ages were almost same between Add. flow group and non-Add. flow group. Indexes of PA were larger in Add. flow group (276 vs. 228 mm²/m²: p=0.023); left PA diameters were larger (18.3 vs. 16.3 mm²/m²: p=0.034); right PA diameters were larger (20.9 vs. 18.2 mm²/m²: p=0.0025). Pulmonary flow was more in Add. flow (3.8 vs. 2.8 L/min/m²: p<0.0001); pulmonary resistance was lower in Add. flow (1.6 vs. 2.0 U*m²: p=0.014); pressure of superior vena cava was higher in Add. flow (13.9 vs. 12.3 mmHg: p=0.039). As for ventricular performances, there were no significant differences in following indexes between two groups: end-diastolic volume, end-systolic volume, and ejection fraction. Pressure indexes were not significantly different between two groups: pulmonary capillary wedge, end-diastolic ventricle, and end-systolic ventricle. Values of NT-proBNP were not significantly different between two groups.

Conclusion: Additional flow grew pulmonary artery diameters larger in Glenn patients. Contrary to our expectation, cardiac functions were not depressed in Glenn patients with additional flow. One explanation for not increasing cardiac loads is that we make shunting narrower on leaving additional flow. Our study showed that additional flow to PA leaves in Glenn patients could turn out a good strategy to grow PA without excess cardiac loads. We could make additional flow coexisting in Glenn patients without depressing cardiac functions.