

P-260

Additional flow on Glenn procedure enlarges not pulmonary artery size but ventricular volume after Fontan

Hamamichi Y., Hori S., Sakurai M., Shimada J., Kobayashi T., Kishiki K., Inage A., Ueda T., Yazaki S., Yoshikawa T.

Sakakibara Heart Institute, Tokyo, Japan

Introduction: We fundamentally prepare additional flow (ADF) to pulmonary arteries on Glenn procedure. We performed ADF in the form of narrowing down original left-to-right shunts to small size. However, ADF, which is left-to-right shunt, is suggestive of imposing over-loads against mono-ventricle. We predicted ADF on Glenn procedure would leave cardiac overloads even after Fontan procedure.

Methods: The medical records of 171 Fontan patients were reviewed who underwent periodic cardiac catheterization after Fontan between 2010 and 2017. We defined ADF patients as having confirmed ADF on pre-Fontan cardiac catheterization (n=111). We compared post-Fontan cardio-pulmonary indexes between Fontan patients with and without history of ADF.

Results: Additional flow was reserved by following methods, such as shunting from aortic branch (52), antegrade flow from ventricular outflow tract (38), and conduit from right ventricle (21). As for cardiac performances, ventricular volumes were larger in ADF group on end-systole (29 vs. 24 ml/m²: p=0.012) and on end-diastole (65 vs. 56 ml/m²: p=0.014). Pulmonary-capillary wedges pressures were also elevated in ADF group (6.7 vs. 5.8 mmHg: p=0.022). There were no significant differences in other cardiac performances. As for pulmonary circulation, there were no significant differences in following factors between two groups; aortic saturation oxygen, indexes of pulmonary arteries (232 vs. 220 mm²/m²), central venous pressures, and pulmonary resistances. Concerning internal use for heart failure, the patient rate with vasodilators was not different between two groups; that with beta blockers was also not different. Similarly, the amounts of enalapril and carvedilol were not different between two groups.

Conclusion: Our study showed ADF patients after Fontan possessed larger ventricular volumes and elevated capillary-wedge pressures than non-ADF patients. However, ADF patients could not gain larger pulmonary sizes after Fontan. This indicated left-to-right shunts (ADF) on Glenn circulation, whose flows we considered low, revealed their adverse effects even after Fontan procedure. Besides, ADF patients did not possess larger pulmonary-artery regardless of holding larger ventricular volumes. If we have to perform ADF to Glenn patients, we should administer heart failure therapies more proactively.