

P-101

Decline of estimated glomerular filtration-rate are mainly related to low cardiac output and combination use of spironolactone in adult Fontan patients

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

Sakakibara Heart Institute Tokyo Japan

Background□ Criterion values of creatinine (Cre) are different according sex and ages, which makes difficult for us to evaluate renal function by raw Cre value. Japanese Society of Nephrology provides formula of estimated glomerular filtration-rate (eGFR), by which we can estimate renal function in Japanese adults. We assessed reduction of kidney functions by means of eGFR in Fontan adults and sought backgrounds of reduced eGFR.

Methods: The medical records of 63 Fontan adults were reviewed aged from 19 years to 46 years. They underwent cardiac catheterization and routine blood test between 2010 and 2016. We calculated eGFR by formula which was composed of power function for Cre values and ages. Patients with eGFR 80 mL/min/m² under (n=17) were defined as eGFR- depression. First, we performed monovariate analysis for eGFR-depression by using the area under a receiving operating characteristics curve (AUROC) and square test. Second, we performed multiple logistic regression model to identify independent predictors for eGFR-depression.

Results: We gained AUROCs for eGFR-depression by 5 indexes; ages (0.683: p=0.027), cardiac output (0.295: p=0.017), end-systolic ventricular volume (0.310: p=0.041), end-diastolic ventricular volume (0.332: p=0.059), and ages at Fontan (0.647: p=0.075). No significant AUROCs were obtained by cardiac performances, such as central venous pressure, ventricular pressure on end-systole and end-diastole, and ventricular ejection fraction. As for internal remedy more patients with eGFR-depression took Spironolactone (73% vs. 31%, p=0.0042). The rates of patients with other drugs were not different between two groups. After multivariate analysis, eGFR-depression was independently associated with cardiac output 1.8 L/min/m² or under (odds ratio 28), diastolic ventricular volume 70% of Normal or under (odds ratio 19), and internal use of Spironolactone (odds ratio 14). The explanatory coefficient was high (R-square=0.64).

Conclusion: In adult Fontan patients eGFR-depression was intensely related to low cardiac output and small ventricle. Pressure loads, such as high central venous-pressure, and low end-systolic ventricular-pressure, were not connected with eGFR-depression. Shortage of renal blood-flow may be the main cause of deteriorating renal function in adult Fontan patients. Besides, eGFR-depression was associated with Spironolactone. We should to estimate eGFR in adult Fontan patients with these risk factors.