

JCK Oral

JCK Oral 3 (II-JCKO3)

Cardiac Surgery

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[II-JCKO3-08]A study on the optimal extra-cardiac conduit size by comparison of exercise capacity according to conduit size in patients with Fontan circulation.

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Introduction: Because Fontan circulation doesn't have a subpulmonary ventricle, the preload is limited. In Fontan circulation with extra-cardiac conduit, the size of conduit could be an important factor in determining the preload. We compared exercise capacity with each conduit size and tried to search for optimal conduit size in Fontan circulation.

Patients and Methods: We reviewed the medical record of 289 patients with Fontan circulation. Patients who had other type Fontan circulation (Kawashima, atriopulmonary, lateral tunnel), SpO₂ <85%, protein losing enteropathy, chronotropic incompetence, and respiratory exchange ratio <1.0 were excluded. As a result, 96 patients were enrolled and classified according to conduit size. We compared with their exercise capacity and analyzed correlation between exercise capacity and conduit size per body surface area (BSA).

Results: Male was 53 and age was 17.8±5.5 years old. In cardiac catheterization, central venous pressure (CVP) was 12.4±2.5 mmHg and pulmonary vascular resistance (PVR) was 1.15±0.53 wu·m². In cardiopulmonary exercise test, predictive peak VO₂ was 60.2±10.4% and VE/VCO₂ was 35.9±7.2. In comparison of CVP, PVR, Qs, peak VO₂, and VE/VCO₂, each conduit groups did not have a difference. However, conduit size per BSA had a significant curved correlation with predictive peak VO₂ and VE/VCO₂.

Conclusions: Our results showed that patients with about 13 mm/m² conduit per BSA have the best exercise capacity. And, patients with larger than smaller sized conduit were found to be more attenuated in their ability to exercise.