

AEPC-YIA Session

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[AEPCYIA] AEPC-YIA Session (II-AEPCYIA)

Chair: Jan Janoušek (Children's Heart Centre, Motol and Homolka University Hospital, Prague, Czech Republic)

Chair: Mikiko Ishido (Department of Pediatric and Adult Cardiology, Tokyo Women's Medical University)

[II-AEPCYIA-1] Risk Factors for the Development of Prosthetic Valve Thrombosis After Systemic Atrioventricular Valve Replacement in Pediatric Patients With a Functional Single Ventricle

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Background and Aim:

The risk factors for the development of prosthetic valve thrombosis (PVT) after systemic atrioventricular valve replacement in patients with functional single ventricles remain poorly understood.

Methods:

The medical records of 39 operations in 28 patients with functional single ventricles who underwent systemic atrioventricular valve replacement between 1998 and 2021 were retrospectively reviewed. Clinical variables were compared between patients with and without PVT.

Results:

The median age at operation was 20 (range: 0-240) months, and the body weight was 7.8 (2.5-57.0) kg. The valve size was 21 (16-33) mm, and the ratio of valve size (mm) to weight (kg) was 2.4 (0.5-6.4). Valve replacement was performed before the bidirectional Glenn procedure (BDG) in 8 cases, with BDG in 7 cases, between BDG and total cavopulmonary connection (TCPC) in 13 cases, with TCPC in 4 cases, and after TCPC in 7 cases. PVT occurred after 12 of the 39 operations (31%). There were significant differences in the age at operation (12 vs. 26 months, $p=0.003$), weight at operation (4.9 vs. 10.2 kg, $p=0.001$), and valve size/weight ratio (3.6 vs. 2.1, $p=0.002$) between operations with and without PVT. There were no significant differences regarding heterotaxy syndrome, preoperative vasoactive agents, or ventricular function. The incidence of PVT was higher before the completion of TCPC than at other points: before BDG (4/8 operations, 50%), BDG (3/7, 43%), between BDG and TCPC (5/13, 38%), compared to TCPC (0/4, 0%), and after TCPC (0/7, 0%) ($P<0.001$). In the multivariate Cox proportional hazards analysis, body weight at surgery was identified as an independent predictor of PVT (Hazard Ratio 0.70, 95% Confidence Interval 0.50–0.89; $p<0.001$). Freedom from the development of PVT was 78% at 1 year and 62% at 5 and 10 years in all patients. In patients weighing <10 kg, freedom from PVT was 38% at 10 years, whereas it was 100% at 10 years in patients weighing ≥ 10 kg.

Conclusions:

Patients who developed PVT were younger, were underweight, and had a greater ratio of

prosthetic valve size to body weight than those who did not. Close monitoring for PVT is warranted, especially before the completion of TCPC.