

論文名 : Risk factors for adverse neurocognitive outcomes in school-aged patients after the Fontan operation (要約)

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OBJECTIVES: As the surgical results for Fontan candidates improve, much attention has been given to the long-term cognitive outcomes. This study aimed to assess the neurocognitive outcomes after Fontan completion, and to determine the factors associated with an extremely low intelligence quotient (IQ <70).

METHODS: A total of 70 local eligible school-aged patients were enrolled in the study (hypoplastic left heart syndrome, 17; right atrial isomerism, 15 and others, 38). Fontan operations were performed at a median age of 1.8 (range, 0.5–8.9) years (primary Fontan, 4 of 70 [6%]). The Wechsler Intelligence Test was taken at a median age of 9 (range, 5.1–14.4) years for the purpose of neurocognitive evaluation. Patients' data were collected from medical records, and a retrospective analysis of potential predictors for an IQ <70 was performed.

RESULTS: The median full-scale IQ (FSIQ) for the entire cohort was 85 (range, 43–118). Of the lower order composites, the perceptual reasoning index and the working memory index were significantly lower in low-FSIQ patients ($P < 0.05$). Overall, 15 of 70 (21%) of the cohort had an IQ <70. Univariate analysis identified three significant risk factors for FSIQ <70 (15 of 70, 21%): body weight <2.5 kg at initial palliative surgery ($P < 0.05$), low 5-min Apgar score <4 ($P < 0.05$) and inter-stage events requiring cardiopulmonary resuscitation (CPR) ($P < 0.05$). No other patient-specific factors (e.g. cardiac morphology) or modifiable surgical factors (e.g. the use of hypothermic cardiac arrest) were associated with FSIQ <70.

CONCLUSIONS: Low body weight (<2.5 kg) at initial operation, low 5-min Apgar score (<4) and inter-stage CPR were significant risk factors for impaired neurocognitive outcomes. An evolving strategy for preventing inter-stage CPR may improve cognitive outcomes.