

**Neurological development of Congenital Heart Disease with Very Low Birth Weight Infants - Multicenter Study in Japan-**

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**Objectives**

The purpose of the study was to investigate neurological outcome in 6-year survivors of very low birth weight (VLBWI) with congenital heart disease (CHD).

**Methods**

We sent a questionnaire to newborn intensive care units (NICU) in Japan. We analyzed the Developmental Quotient (DQ) evaluated at 3 years old and full scale IQ at 6 years old in VLBWI born from 2000 to 2006. We compared the clinical and developmental data in patients with CHD (CHD group) to 229 VLBWIs without CHD admitted in our NICU (no-CHD group).

**Results**

We obtained a questionnaire from 12 NICU. There were 45 VLBWIs with CHD (CHD group). The most common lesions were ventricular septal defect (44%), tetralogy of Fallot (16%) and pulmonary valvular stenosis (9%). Of 45 patients, 9 (20%) had chromosomal abnormality, 21 patients (47%) performed surgical repair or catheter interventions. Median periods of hospital stay and intubation were 80 days (43~215 days) and 7 days (0~138 days), respectively. There were no significant differences in the periods of hospital stay, intubation periods, and the frequency of severe complications such as chronic lung disease, necrotizing enterocolitis and brain hemorrhage between CHD and no CHD group. In CHD group, the Cognitive-Adaptive(C-A) DQ, Language-Social (L-S) DQ, Postural-Motor (P-M) DQ, and overall DQ were 83 (14~117), 81(16~114), 77(12~124), 81(19~114), respectively. All DQ scores were below reported normal range. When compared to scores in the no-CHD group, all scores were also lower in the CHD group. However, there were no significant differences of all DQ scores between in CHD (median of overall DQ: 87, P-M DQ: 180, C-A DQ: 87, L-S DQ: 84), and no-CHD patients (median of overall DQ: 86, C-A DQ: 86, L-S DQ: 86, P-M DQ 100, when patients with chromosome anomaly were excluded (All scores,  $p>0.05$ ). Full scale IQ of patients excluded chromosomal anomaly was not statistically deferent between CHD and no-CHD groups (88(63-103) vs. 92(45-129).

**Conclusions**

The degree of neurocognitive deficits of survivors of VLBWI with CHD is similar to that of no-CHD survivors of VLBWI at the age of 6 years