

Intellectual functioning in children with congenital heart defects

Ryberg C. (1,2), Broberg M. (2), Sunnegårdh J. (1), Thorson M. (1,2)
 Sahlgrenska University Hospital, Gothenburg, Sweden (1); Department of Psychology, University of Gothenburg, Gothenburg, Sweden (2)

Introduction: Studies on children with congenital heart defects (CHD) have indicated that children with mild diagnoses have lower incidence of neurodevelopmental problems than children suffering from severe defects. However, conclusions have been difficult to make since research has been limited to small groups of patients with specific diagnoses or undergoing particular surgical procedures. This study aims to describe and compare intellectual functioning in children with CHD in relation to severity of CHD.

Methods: A total of 531 patients were invited to this study. Families of 235 children agreed (44.3% participation). Participants met a clinical psychologist at their local hospital and underwent a psychological evaluation including testing with the Wechsler scales of intelligence (WPPSI-III or WISC-IV). Participants were divided into three groups depending on severity of diagnosis (Mild, Moderate or Severe). Included in the groups, e.g.; ASD, VSD, PDA and CoA (Mild group); TGA, ToF and AS (Moderate group); SV and PA with VSD (Severe group).

Results: Five analyses of variance were done to assess differences between the severity groups on five intelligence indexes (see figure). For Full Scale IQ (FSIQ), children with Severe CHD had a significantly lower IQ than children with Mild or Moderate severity levels. For Verbal IQ/Verbal Comprehension Index (VIQ/VCI) the Severe group had significantly lower scores than the Mild and Moderate groups. No significant differences in FSIQ or VIQ/VCI were shown between the Mild and Moderate groups. For Performance IQ/Perceptual Reasoning (PIQ/PRI) the Severe group had significantly lower IQ than the Moderate group while the Mild group did not differ significantly from the other two. For Processing Speed (PSQ/PSI) the Severe group had significantly lower IQ than the Mild group while the Moderate group did not differ from the other two. For Working Memory (WMI) there were no significant differences between the severity groups.

Conclusions: When looking at differences between the CHD groups, the group Severe stands out as presenting lower levels of intellectual functioning. Although as many as 58.7% of the Severe group have average IQ results, and 10.7% show results clearly above average, there were as many as 30.6% showing results clearly below average.

