Novelty-processing in infants with acyanotic congenital heart defects: a behavioural and ERP study

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Abstract

Children with congenital heart defects exhibit subtle cognitive deficits in mid-childhood, particularly in the domain of attention. Whether analogous deficits could be observed in infancy is currently unknown. We investigated the allocation of attention to novel stimuli in 12 infants with acyanotic congenital heart defects (Acyanotic-CHD), as this is thought to underpin cognitive development, and may explain the deficits seen in later childhood. Infants with Acyanotic-CHD (n=12) and matched controls (n=12) aged between 6 and 9 months, participated in a behavioural task (novel object exploration), and an event-related potential (ERP) auditory novelty oddball paradigm. Children were also assessed using the Bayley Infant Neurodevelopmental Screener (BINS). Infants with Acyanotic-CHD exhibited decreased exploration of novel objects (P=.044), and altered ERP (negative component) activity, particularly over the centro-parietal cortex (P=.018). However, no significant differences in BINS scores were observed. These findings suggest a mechanism for the cognitive profile of older children.

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