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Pediatric temporal lobe epilepsy versus frontal lobe epilepsy: how does cognitive performance differ?

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Background

Examinations of cognitive impairments associated with partial epilepsy have focused primarily on temporal lobe epilepsy (TLE), with results indicating both general and specific cognitive impairments, including verbal memory and language impairments in both adults and children [1-3]. Little is known about frontal lobe epilepsy (FLE). The few existing investigations of pediatric FLE suggest visuospatial difficulties [4].

Materials and methods

The current study investigated differences in general intellectual ability, verbal and nonverbal ability and memory between children with TLE and FLE. Participants (TLE n=15, FLE n=15, ages 7 to 17, mean age 11.5 years, 50% male) were patients from a pediatric neuropsychology clinic. Diagnoses were confirmed by EEGs, clinical report, and physical examination. The Wechsler Abbreviated Scale of Intelligence (WASI), verbal and nonverbal memory tasks were administered.

Results

T-tests revealed that WASI FSIQ was higher in TLE than FLE, t = 2.08, p =.047. The WASI subtest of Block Design was also higher in TLE, with t = 2.37, p =.025. No significant differences between TLE and FLE were detected on memory performance. While not all were significantly different, mean scores of children with FLE were lower than those of children with TLE on all indices.

Conclusions

Children with FLE scored lower on a visuospatial task, indicating a specific weakness and also on FSIQ, indicating broader cognitive impairment in FLE than TLE. Expected memory impairments were not confirmed in either TLE or FLE. It is important characterize pediatric FLE further in order to optimize treatment and rehabilitation.

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