Neuropsychological profiles of children with vestibular loss

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BACKGROUND: The impact of vestibular loss (VL) on cognition has been previously studied in experimental animal, human and adult patient studies showing links between VL, and cognitive impairments in space orientation, working memory, mental rotation and selective attention. However, few studies have been conducted on children with VL.

OBJECTIVE: We investigated for the first time, the impact of a VL on children's cognition.

METHODS: 13 children with VL (10 years, 5 months) and 60 average-age matched controls performed a neuropsychological assessment consisting of visuospatial working memory, selective visual attention, mental rotation and space orientation tasks.

RESULTS: Children with VL recalled smaller sequences for both forward and backward memory subtasks (mean $\pm$ SD = 6.3 $\pm$ 1.9 and 5.3 $\pm$ 2.6) than controls (8.2 $\pm$ 2.3 and 7.3 $\pm$ 2.0), have less accurate mental rotation scores (25.4 $\pm$ 6 versus 30.8 $\pm$ 5.1) and greater additional distance travelled in the maze task (96.4 $\pm$ 66.6 versus 60.4 $\pm$ 66.3); all corrected p-values < 0.05. Selective visual attention measures do not show significant differences.

CONCLUSIONS: Children with VL show similar cognitive difficulties that adults with VL, in tasks involving dynamic cognitive processes (higher attentional load) that in tasks requiring static cognitive processes such as visual attention task.

Keywords : vestibular, children, neuropsychology, cognitive abilities, vestibular loss