The Correlation Between Cognitive and Movement Shifting and Brain Activity in Children With ADHD

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Objective:
We assessed the correlation between the deficits of cognition, movement, and brain activity in children with Attention Deficit Hyperactivity Disorder (ADHD).

Method:
We recruited 15 children with ADHD and 15 age- and sex-matched healthy control participants. Clinical symptoms, cognitive shifting, movement shifting, and brain activity were assessed using the Korean ADHD Rating Scale, the Wisconsin Card Sorting Test (WCST), the 7- and 14-ring drill test with hop jumps (7 HJ and 14 HJ), and 3.0 Tesla functional magnetic resonance imaging scanner, respectively.

Results:
ADHD children showed an increased distance traveled and decreased speed on the 14 HJ task. In response to the WCST task, ADHD children showed decreased activation within right gyrus. Total distance on the 14 HJ task was negatively correlated with the mean β value of Cluster 2 in ADHD children.

Conclusion:
These results suggested that children with ADHD showed difficulty with attention shifting as well as with movement shifting.