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Abstract
OBJECTIVES:
Attention deficit/hyperactivity disorder (ADHD) is associated with deficits in the dopaminergic fronto-striatal systems mediating higher-level cognitive functions. We hypothesised that a dopamine-regulating gene, catechol-O-methyltransferase (COMT), would have differential effects on the neural systems of different ethnic samples with ADHD. In Caucasian children with ADHD, the COMT Val-homozygotes have been previously shown to be associated with striatal grey matter volume (GMV) alterations. By using voxel-based morphometry, we examined whether Asian children with ADHD would exhibit a pattern opposite to that found in Caucasian samples.

METHODS:
Structural brain images were obtained for Japanese children with ADHD (n = 17; mean age = 10.3 years) and typically developing (TD) children (n = 15; mean age = 12.8 years). COMT Val158Met genotype data were also obtained for the ADHD group.

RESULTS:
Reduced GMV in the left striatum was observed in the ADHD group versus the TD group. This reduced GMV was modulated by COMT polymorphism; Met-carriers exhibited smaller striatal GMV than the Val/Val genotype.

CONCLUSIONS:
Contrasting with previous findings in Caucasians, the COMT Met allele was associated with striatal GMV alterations in Japanese children with ADHD. These results suggest the existence of ethnic differences in the COMT genetic effect on ADHD-related striatal abnormalities.