The role of CLOCK gene and sleep problems on inhibition in male children with attention-deficit/hyperactivity disorder

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Abstract

Objective
To explore the correlation between circadian clock gene clock circadian regulator (CLOCK) and attention-deficit/hyperactivity disorder (ADHD) and the role of CLOCK and sleep problems on inhibition in male children with ADHD.

Methods
Two single nucleotide polymorphisms (SNPs) of CLOCK were genotyped in 854 male ADHD children and 320 male controls. Sleep problems were assessed using parent symptom questionnaire. In ADHD cases, the main effects and interaction of CLOCK SNPs and sleep problems on inhibition assessed by using Stroop Color and Word Test were analysed using the analysis of covariance (ANCOVA).

Results
No significant differences in allele and genotype frequencies were found for rs6832769 and rs11932595 in all case-control groups (P>0.05). In ADHD cases, the main effects of rs6832769 and rs11932595 genotypes and sleep problems on inhibition were not significant (P>0.05). However, the interaction of rs6832769 genotype and sleep problems was significant (F=6.71, P=0.01). When accompanied with sleep problems, ADHD cases carrying the AA&AG genotype showed the longest time of word interference (F=6.63, P=0.01).

Conclusions
Inhibition of male ADHD children can be modulated by the interaction of CLOCK rs6832769 and sleep problems.