DRD4 Gene Polymorphisms as a Risk Factor for Children with Attention Deficit Hyperactivity Disorder in Iranian Population

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Abstract

Background and Objective.
Dopamine dysfunction is known to be associated with attention deficit hyperactivity disorder (ADHD). Dopamine D4 receptor gene (DRD4) is one of the important genes in this pathway. This study intended to investigate the variable number of tandem repeats (VNTR) in exon 3 of the DRD4 gene in Iranian children and adolescents.

Materials and Methods.
In this study, 130 children with ADHD, aged 6–14 years, and 130 healthy children, within the same age range, were enrolled. All children were selected from northwest of Iran which have the Caucasian ethnic background and are a Turkic ethnic group. VNTR polymorphisms of the DRD4 gene were evaluated by PCR using exon 3-specific primers followed by agarose gel electrophoresis.

Findings.
The Hardy-Weinberg principle and Chi-square test showed a significant difference in 4-repetition (4R) alleles between the ADHD (76.2%) and control (53.8%) groups (p=0.004; X²=17.39; df=5). The least percentage of repetition alleles in both groups was 2R.

Conclusion.
There is a significant correlation between the 4R alleles of DRD4 and ADHD in the northwest of Iran.