Altered methyltetrahydrofolate reductase gene polymorphism in mothers of children with attention deficit and hyperactivity disorder


Abstract

Attention Deficit and Hyperactivity Disorder (ADHD) is one of the most common psychiatric disorders in childhood and causes significant functional impairments in children. Behavioral genetic and molecular genetic studies have provided significant evidence in terms of highlighting the etiology of ADHD. Folate deficiency during pregnancy is an established risk factor for ADHD. Polymorphisms in the Methyltetrahydrofolate Reductase (MTHFR) encoding gene, such as A1298C and C667T, are associated with the decreased bioavailability of folate, and this condition can act like folate deficiency. In the literature, no study has investigated MTHFR polymorphisms in mothers of children with ADHD. Sixty-four children diagnosed with ADHD and their mothers as well as 40 healthy children and their mothers participated in this study. MTHFR polymorphisms were investigated in all participants. Comparison of the C677C and A1298C MTHFR polymorphisms in children with and without ADHD revealed no significant differences. We found that the maternal C677C_CT genotype counts, both observed and expected values, were significantly different from those based on Hardy-Weinberg Principle Analysis in the ADHD group. The most important result of this study was that maternal C677C MTHFR gene polymorphisms are significant risk factors in for ADHD, and we argue that children with ADHD are exposed to folate deficiency, even if their mothers received a sufficient amount of folate during pregnancy. This result also highlights one of the genetic factors of ADHD. Further studies should be performed to confirm this finding.