Abstract

Polygenic inheritance of Tourette syndrome, stuttering, attention deficit hyperactivity, conduct, and oppositional defiant disorder: the additive and subtractive effect of the three dopaminergic genes--DRD2, D beta H, and DAT1.


Polymorphisms of three different dopaminergic genes, dopamine D2 receptor (DRD2), dopamine beta-hydroxylase (D beta H), and dopamine transporter (DAT1), were examined in Tourette syndrome (TS) probands, their relatives, and controls. Each gene individually showed a significant correlation with various behavioral variables in these subjects. The additive and subtractive effects of the three genes were examined by genotyping all three genes in the same set of subjects. For 9 of 20 TS associated comorbid behaviors there was a significant linear association between the degree of loading for markers of three genes and the mean behavior scores. The behavior variables showing the significant associations were, in order attention deficit hyperactivity disorder (ADHD), stuttering oppositional defiant, tics, conduct, obsessive-compulsive, mania, alcohol abuse and general anxiety-behaviors that constitute the most overt clinical aspects of TS. For 16 of the 20 behavior scores there was a linear progressive decrease in the mean score with progressively lesser loading for the three gene markers. These results suggest that TS, ADHD, stuttering oppositional defiant and conduct disorder, and other behaviors associated with TS, are polygenic, due in part to these three dopaminergic genes, and that the genetics of other polygenic psychiatric disorders may be deciphered using this technique.

PMID: 8725745 [PubMed - indexed for MEDLINE]