Variation within the Huntington's disease gene influences normal brain structure.

Abstract:
Genetics of the variability of normal and diseased brain structure largely remains to be elucidated. Expansions of certain trinucleotide repeats cause neurodegenerative disorders of which Huntington's disease constitutes the most common example. Here, we test the hypothesis that variation within the IT15 gene on chromosome 4, whose expansion causes Huntington's disease, influences normal human brain structure. In 278 normal subjects, we determined CAG repeat length within the IT15 gene on chromosome 4 and analyzed high-resolution T1-weighted magnetic resonance images by the use of voxel-based morphometry. We found an increase of GM with increasing long CAG repeat and its interaction with age within the pallidum, which is involved in Huntington's disease. Our study demonstrates that a certain trinucleotide repeat influences normal brain structure in humans. This result may have important implications for the understanding of both the healthy and diseased brain.