

Magnetization transfer MR imaging demonstrates degeneration of the subcortical and cortical gray matter in Huntington disease.

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Source

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Abstract

BACKGROUND AND PURPOSE:

GM is typically affected in HD since the presymptomatic stage. Our aim was to investigate with MT MR imaging the microstructural changes of the residual brain subcortical and cortical GM in carriers of the HD gene and to preliminarily assess their correlation with the clinical features.

MATERIALS AND METHODS:

Fifteen HD gene carriers with a range of clinical severity and 15 age- and sex-matched healthy controls underwent MT MR imaging on a 1.5T scanner. The MT ratio was measured automatically in several subcortical and cortical GM regions (striatal nuclei; thalami; and the neocortex of the frontal, temporal, parietal, and occipital lobes) by using FLS tools.

RESULTS:

The MT ratio was significantly ($P < .05$ with Bonferroni correction for multiple comparison) decreased in all subcortical structures except the putamen and decreased diffusely in the cerebral cortex of HD carriers compared with controls. Close correlation was observed between the subcortical and cortical regional MT ratios and several clinical variables, including disease duration, motor disability, and scores in timed neuropsychological tests.

CONCLUSIONS:

MT imaging demonstrates degeneration of the subcortical and cortical GM in HD carriers and might serve, along with volumetric assessment, as a surrogate marker in future clinical trials of HD.