What we know about Huntington's Disease from Neuroimaging Studies

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As a neurodegenerative disorder, Huntington's disease produces a variety of abnormalities, which can be observed in neuroimaging. Despite neuroimaging is not a key in differential diagnostics, when positive family history is present, it helps exclude other potential causes of chorea – vascular, inflammatory, or metabolic. Moreover, modern neuroimaging provides substantial insight into the pathophysiology of the disease, allowing tracking the progression and visualizing diversity. Studies using high-resolution volumetric MRI precisely imagined the patterns of brain atrophy and rate of progression at different stages of the disease – from asymptomatic to moderately advanced. Functional MRI studies provide an insight into the presence of compensatory mechanisms that influence the onset of the disease symptoms. An important role of modern neuroimaging is also to provide reliable biomarkers that track the disease progression and be used in clinical trials of potentially disease-modifying compounds. PET studies using FDG and dopamine imaging biomarkers seem to be a unique technique in this field. The presentation will briefly review current concepts in neuroimaging used in differential diagnostics, basic studies, and searching of clinical biomarkers of Huntington's disease.