

Conventional and Advanced MR imaging of Parkinson's Disease

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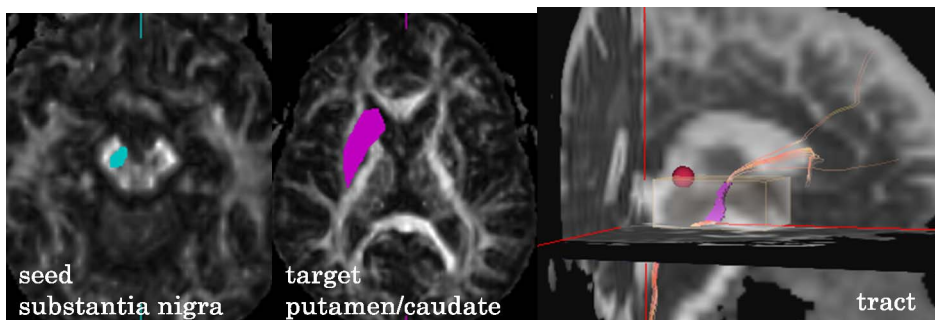
Purpose: Conventional MR imaging of Parkinson disease(PD) is frequently normal or non-specific. However recent advanced MR techniques, such as diffusion tensor imaging (DTI), Voxel based analysis, and Arterial spin labeling(ASL) allow us to evaluate changes related to the pathophysiology of PD. DTI shows changes of FA in the substantia nigra and some white matter tracts. ASL shows reduced CBF in the occipital lobe. The purpose of this exhibit is to review the conventional and advanced MR imaging of Parkinson disease and its related dementias.

Outline of Content:1. Review of conventional MR imaging of PD. 2. Advanced MR techniques for PD.3. Review of our results of MR data sets of PD and age matched controls using DTI, ASL. Analysis of DTI includes ROI, tractography (tract specific analysis).

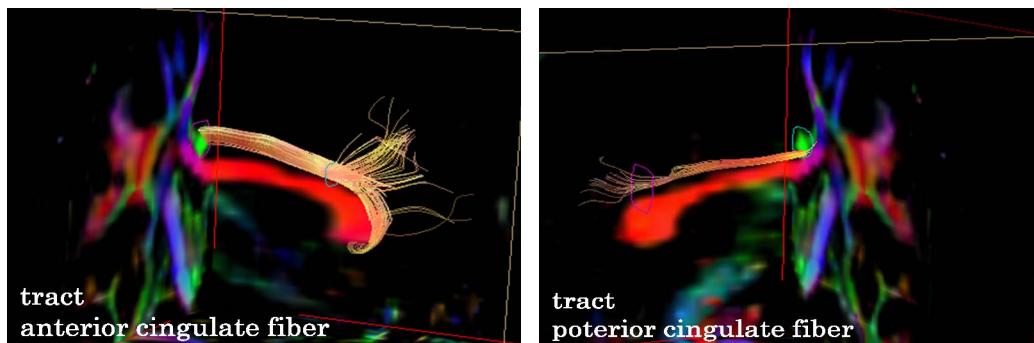
SUMMARY: We reviewed conventional and advanced MR imaging of Parkinson disease. Using DTI, FA in the substantia nigra and cingulum reduced in PD patients compared to normal controls. ASL showed hypoperfusion in the occipital lobes. Advanced technique such as DTI and ASL may clarify new pathophysiological changes of PD and help early diagnosis and monitoring of PD.

Our DTI study

【Subjects】 10 patients with PD without dementia, age matched 10 controls **【Results】** The FA in the tract between the SN and the lower part of the putamen/caudate complex was significantly lower in PD without dementia patients than in normal controls ($p<0.05$).



【Subjects】 15 patients with PD without dementia, age matched 15 controls, 10 patients with PD with dementia. **【Results】** The FA in the anterior and posterior cingulate fiber tracts was significantly lower in PD with dementia patients than in PD without dementia and normal controls. The FA in the posterior cingulate fiber tracts was significantly lower in PD with dementia patients than in PD without dementia patients.



【Conclusions】 The abnormal FA decrease is consistent with neuropathological data that demonstrate partial loss of myelin, axons, and oligodendrial cells in white matter of PD brains. Our results suggest that FA reflect progression of PD-related pathological changes in the tract between the SN and the putamen/caudate and the cingulate fiber. DTI may clarify pathophysiological changes of PD and help early diagnosis and monitor disease progression in PD.