NEUROIMAGING OF IDIOPATHIC REM SLEEP BEHAVIOR DISORDER

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Introduction Resting-state functional magnetic resonance imaging (rs-fMRI) studies have previously shown significantly impaired connectivity in patients within the early motor phase of Parkinson’s disease. Is it possible to detect the same imaging signature of Parkinson’s in RBD subjects, before a clinical diagnosis of Parkinson’s disease is established?

Methods Twenty-six patients with polysomnography-proven RBD and twenty-two age- and sex-matched healthy controls were recruited into the study. All subjects underwent a comprehensive structural and resting-state MRI protocol.

Results Voxel-based morphometry analysis did not yield any significant grey matter differences between the two groups.
Similarly, no significant differences of fractional anisotropy were found using white matter tract analysis. Rs-fMRI revealed decreased coactivation within the basal ganglia network (involving the caudate, putamen, globus pallidus bilaterally) and the sensorimotor network (precentral gyrus) of patients with RBD. A small area of increased coactivation was found in the default mode network of patients with RBD.

Conclusions Our findings support the presence of basal ganglia dysfunction in patients with RBD, likely representing the prodromal stages of Parkinson’s disease. Clinical and neuroimaging follow up is necessary to assess the clinical utility of resting state fMRI to predict the onset of Parkinson’s disease in RBD subjects.
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