

AbstractID: 2789 Title: Image registration and voxel based analysis for the Differential Diagnosis of Corticobasal degeneration and progressive supranuclear palsy

Purpose: This study measured the cerebral glucose metabolism in patients suffering from corticobasal degeneration (CBD) and progressive supranuclear palsy (PSP). PSP and CBD are neurodegenerative disorders that may be accompanied by dementia and parkinsonism as clinical symptoms. The aim was to determine if there was a different metabolic pattern using ^{18}F -labeled 2-deoxyglucose (^{18}F -FDG) positron emission tomography (PET).

Method and Materials: The regional cerebral glucose metabolism was examined in 8 patients with a clinical diagnosis of CBD (mean age 69.6 ± 7.8 y; male/female: 5/3), 8 patients with probable PSP (mean age 67.8 ± 4.5 y; male/female: 4/4) and 22 healthy controls. Statistical parametric mapping (SPM) using a voxel by voxel approach ($p < 0.001$, 200 voxel-level) was used to compare the regional cerebral glucose metabolism between the 3 groups.

Results: Compared with the normal controls, asymmetry in the regional glucose metabolism was observed in the parietal, frontal and cingulate in CBD patients. In the PSP patients, the glucose metabolism was lower in the orbitofrontal, middle frontal, cingulate, thalamus and mid brain than their age matched normal controls. A comparison of the two patient groups demonstrated relative hypometabolism in the thalamus, the mid brain in PSP and the parietal lobe in CBD patients.

Conclusion: These results suggest that when making a differential diagnosis of CBD and PSP, voxel based analysis of the ^{18}F -FDG PET images using SPM might be a useful adjunct tool in clinical examinations.