AbstractID: 2788 Title: A Comparative PET study of regional cerebral metabolism with multiple system atrophy

Purpose: The ^{18}F-FDG PET images of the Multiple System Atrophy (MSA) and Idiopathic Parkinsonian Disease (IPD) patients were assessed by statistical parametric mapping (SPM) and image registration in order to determine the useful metabolic patterns between the two groups. A differential diagnosis of IPD and MSA is difficult due to the common of signs and symptoms. The aim of this study was to compare the regional cerebral glucose metabolism of MSA from IPD.

Method and Materials: Eight clinically probable, IPD patients (3/5:M/F; age, 67.9 ± 10.7 y) and 11 probable MSA patients (4/7:M/F; age, 58.5 ± 8.4 y) were included in the study. Twenty-two ages matched healthy controls (9/13:M/F, age, 67.8 ± 14.4 y) were examined and were used as the controls for the comparison between the patients with Parkinsonism. All subjects underwent ^{18}F-FDG PET.

Results: The IPD patients was found to have significantly low hypometabolism in comparison with the healthy controls on the prefrontal and lateral frontal cortex, the parietotemporal cortex, and the cingulated and caudate ($p \leq 0.01$, 100 voxel-level). As to patients with MSA, hypometabolism was observed in the putamen, pons and cerebellum in comparison with the healthy controls and IPD patients. Voxel-based analysis of ^{18}F-FDG PET showed detailed differences between IPD and MSA, which may be useful for differentiating both disease entities, evidenced by the correlation of glucose metabolism with the disease severity and the dopamine agonist medication.

Conclusion: Voxel-based analysis of ^{18}F-FDG PET showed detailed differences between IPD and MSA, which may be useful for differentiating both disease entities, evidenced by the correlation of glucose metabolism with the disease severity and the dopamine agonist medication. The ^{18}F-FDG PET images using mapping analysis might be a useful adjunctive tool for a clinical examination when making a differential diagnosis of Parkinsonism.