

Comparison of FDG-PET and IMP-SPECT in patients with dementia with Lewy bodies

Kazunari ISHII,* Kayo HOSAKA,*,** Tetsuya MORI* and Etsuro MORI**

*Department of Radiology and Nuclear Medicine, Hyogo Brain and Heart Center

**Institute for Aging Brain and Cognitive Disorders, Hyogo Brain and Heart Center

***Department of Radiology, Kobe University Graduate School of Medicine

Objectives: To investigate regional differences in cerebral glucose metabolism and blood flow of dementia with Lewy bodies (DLB), we studied 7 subjects with DLB and 20 normal controls using F-18 fluorodeoxyglucose (FDG) and positron emission tomography (PET) and then examined the same 7 subjects and 20 other normal controls with I-123 iodoamphetamine (IMP) and single photon emission computed tomography (SPECT). **Methods:** The anatomically standardized images were produced with NEUROSTAT and the regional relative metabolic and perfusional values were calculated. **Results:** The mean reduction ratios of FDG uptake in the DLB group relative to the mean normal controls in the parietal lobe and occipital lobe were 0.72 and 0.83, respectively, while the corresponding mean reduction ratios of IMP uptake were 0.81 and 0.88, respectively. In the DLB group, parietal FDG uptake was significantly lower than parietal IMP uptake ($p < 0.05$), occipital FDG uptake was significantly lower than occipital IMP uptake ($p < 0.05$), and parietal IMP uptake was significantly lower than occipital IMP uptake ($p < 0.01$), but there was no difference between parietal and occipital FDG uptake. **Conclusions:** Our findings suggest that parietal metabolism and perfusion are severely affected in DLB patients, though the occipital metabolic and perfusional reduction is thought to be a feature of DLB. FDG-PET is thought to be superior to IMP-SPECT in detecting functional changes in the DLB brain.

Key words: dementia with Lewy bodies, fluorodeoxyglucose (FDG), positron emission tomography (PET), iodoamphetamine (IMP), single photon emission computed tomography (SPECT)