THREE DIMENSIONAL BRAIN SPECT IMAGE ANALYSIS IN PARKINSON'S DISEASE (PD) AND ALZHEIMER'S DISEASE (AD)

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The aim of this study is to determine that DLB (consistent with diagnostic criteria of 1 year rule) and PDD are distinct entities or part of a continuum with respect to the duration of parkinsonism and clarify whether there is a difference between PD and AD.

Method: The easy Z-score Imaging System (eZIS) and Voxel Based Stereotactic Extraction Estimation (vbSEE) was used in this study. A more than 20% decrease in the extent % in the level 3 was assessed as the abnormal hypoperfusion.

Patient: Ninety-five PD patients (15 DLB, 26 PDD with hallucination (PDDH), 15 PDD, 11 PD with hallucination (PDH), 28 PD with neither dementia nor hallucination), 235 probable AD (NINCDS-ADRDA) (219 AD only, 16 AD with hallucination (ADH)), and 127 normal controls.

Results: The highest rate of hypoperfusion was observed in DBL patients; 93.2% in the angular gyrus (AG), 86.7% in the supramarginal gyrus (SM), middle temporal gyrus (MT), and superior occipital gyrus (SO). The hypoperfusion rate decreased in the following order; PDDH, PDH, PDD, and PD. The rate in the latter two patients was less than 50%.

The hypoperfusion rate in AD and ADH was higher in the latter patients; 56.2% and 68.8% in AG, respectively. The difference of hypoperfusion regions between in AD, and in DLB and PDDH was in the occipital lobes.

Conclusions: An extremely high frequency of hypoperfusion rate in the parieto-temporo-occipital lobe is highly diagnostic in DLB. The appearance of hallucination is related to the increase of hypoperfusion rate in the parieto-temporal lobes.