INPH: DETERIORATION OF FRONTAL LOBE FUNCTION

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Introduction: Idiopathic normal pressure hydrocephalus (iNPH) is a reversible dementia characterized by gait disturbance, dementia and impairment in bladder control (Adam’s triad). Diagnosis can be challenging due to its varied presentation and overlap with other disorders common in the elderly.

Aims: The origin of Adam’s triad in iNPH is poorly understood. This study investigates the neuropsychological characteristics in patients with iNPH.

Methods: On the basis of Clinical Guidelines for idiopathic Normal Pressure Hydrocephalus (Ishikawa M et al.), 5 participants (4 males and 1 female) were diagnosed with probable iNPH. We examined the scores of the Frontal Assessment Battery (FAB), trail making tests (TMT) and the Mini-Mental State Examination (MMSE). The cerebral blood flow (CBF) was measured by N-isopropyl-123-P-iodo-amphetamine single photon emission computed tomography, and the perfusion patterns of the cerebral cortex were measured based on three-dimensional stereotactic surface projection (3D-SSP) Z-score images.

Results: Patients with iNPH were assessed before and after lumbar puncture with neuropsychological batteries shown to be sensitive to damage to the frontal lobe (FL). Disequilibrium was the main feature of gait disturbance, suggesting dysfunction of FL. 3D-SSP analysis of SPECT images revealed that regional CBF in FL and Sylvian fissure decreased in iNPH patients.

Conclusions: Damages of periventricular structures, such as frontal subcortical and cortical areas, are closely connected with impairments of iNPH (gait disturbance, incontinence and dementia).