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WHITE MATTER LESIONS VERSUS ALZHEIMER'S DISEASE: WHICH IS MORE SIGNIFICANT BURDEN ON OAB AND INCONTINENCE IN THE ELDERLY DEMENTIA?

Hypothesis / aims of study

Age-related white matter lesions (WML, also called vascular dementia) and Alzheimer's disease (AD) are common causes of elderly dementia, and are known to be independent risks for overactive bladder (OAB) and incontinence. The aim of the study is to elucidate which is more significant burden on OAB and incontinence in the elderly dementia.

Study design, materials and methods

We recruited 49 patients with OAB and mild/moderate dementia (21 men, 28 women; mean age, 76 years); the underlying diseases are AD alone in 9, AD+WML in 15, and WML alone in 25. AD was diagnosed according to the published criteria. In order to augment diagnostic accuracy, we performed Voxel-based Specific Regional analysis system for Alzheimer's Disease (VSRAD) of brain MRI in all subjects (Figure 1). WML was defined as more than grade 2/4 of Brant-Zawadzki's grading scale (Figure 2). Dementia with Lewy bodies and other dementia etiologies were excluded. We performed a systematized lower urinary tract symptom (LUTS) questionnaire and a urodynamics according to the ICS standards. Before participating in the study, informed consent was obtained in all subjects and their families. This study was approved by local Ethics Committee.

Results

Frequency of detrusor overactivity and average bladder capacity volume were mostly the same in the subgroups, e.g., 77.8%, 256 ml in AD alone; 77.3%, 276 ml in AD+WML; and 60%, 248ml in WML alone, respectively. In contrast, first sensation volume was smaller in WML alone, e.g., 136ml, 142ml, 113ml, respectively. Similarly, daytime urinary frequency (more than 8 times), night-time urinary frequency (more than twice), urinary incontinence (more than once a week) was most common in WML alone, e.g., 33%, 44%, 33%; 40%, 60%, 27%; 68%, 84%, 40%, respectively.

Interpretation of results

The present study results indicated that WML is more significant burden on OAB and incontinence than AD in the elderly dementia. This most presumably reflects the difference in brain pathology and relevant cortical hypofunction: e.g., in AD, parietal-temporal hypo-perfusion is common whereas in WML, frontal hypo-perfusion is common in the previous studies. However, since this is a small study, clarification with a larger study is needed. The present study results shed light to practical management and care of OAB and incontinence in the elderly dementia.

Concluding message

WML is more significant burden on OAB and incontinence than AD in the elderly dementia.

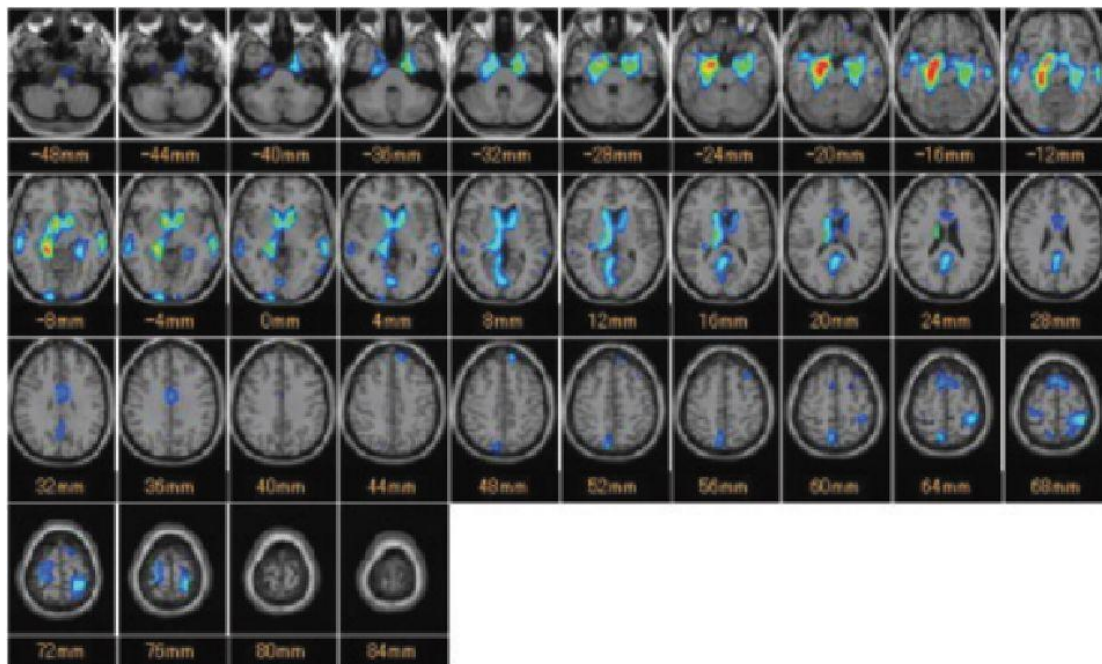
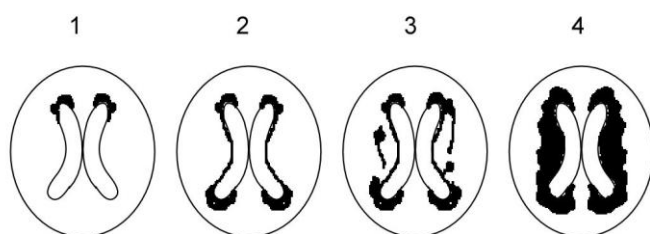


Figure 1 VSRAD of MRI as used for the diagnosis of Alzheimer's disease in this study. Voxel-based hippocampal atrophy is statistically depicted in colour, and indicated as Z-score (0-1, none, 1-2, mild, 2-3, moderate, 3< severe).



Schematic presentation of the grading of age-related white matter lesion on MRI (according to Brand-Zawadzki) Grade 1: punctated foci of high signal intensity in the white matter immediately at the top of the frontal horns of the lateral ventricles. Grade 2: white matter lesions were seen elsewhere but remained confined to the immediate subependymal region of the ventricles. Grade 3: periventricular as well as separate, discrete, deep white matter foci of signal abnormality. Grade 4: discrete white matter foci had become large and coalescent.

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<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Ethics Committee in Sakura Medical Center, Toho University
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes