

Sakakibara R<sup>1</sup>, Haruta H<sup>1</sup>, Ogata T<sup>1</sup>, Tateno F<sup>1</sup>, Takahashi O<sup>2</sup>, Kishi M<sup>1</sup>, Ogawa E<sup>1</sup>, Yano H<sup>3</sup>, Uchiyama T<sup>4</sup>, Yamamoto T<sup>4</sup>, Yamanishi T<sup>5</sup>

*1. Neurology, Internal Medicine, Sakura Medical Center, Toho University, Sakura, Japan, 2. Clinical Physiology Unit, Sakura Medical Center, Toho University, Sakura, Japan, 3. Urology, Sakura Medical Center, Toho University, Sakura, Japan, 4. Neurology, Chiba University, Chiba, Japan, 5. Urology, Dokkyo Medical College, Tochigi, Japan*

## **RELATIONSHIP BETWEEN DETRUSOR OVERACTIVITY WITH FRONTAL COGNITIVE HYPO-FUNCTION ; A STUDY IN ELDERLY DEMENTIA WITH OAB**

### Hypothesis / aims of study

To investigate relationship between detrusor overactivity (DO) with general and frontal cognitive function in elderly dementia with OAB.

### Study design, materials and methods

We recruited 60 patients with OAB and mild/moderate dementia. All patients underwent a systematized lower urinary tract symptom (LUTS) questionnaire, urodynamics according to the ICS standards, and cognitive tests (general function; Mini-Mental State Examination [MMSE], and frontal function, Frontal Assessment Battery [FAB]). The underlying diseases are 20 with Alzheimer's disease (AD; 8 male, 22 female; mean age 77 years [60-89 years], 13 with DO, 7 without DO; mean value of MMSE 16.9 [normal>24], FAB 8 [normal>16], respectively); 40 with white matter lesions (WML, also called vascular dementia) (20 male, 20 female; mean age 77 years [60-89 years], 22 with DO, 18 without DO; mean value of MMSE 25.8, FAB 13.6, ADAScog 9.1, respectively). AD was diagnosed according to the published criteria and brain MRI volumetry (VSRAD). WML was defined as more than grade 2/4 of Brant-Zawadzki 's grading scale. Comorbid AD with WML cases, dementia with Lewy bodies, and other dementia etiologies were excluded. Before participating in the study, informed consent was obtained in all subjects and their families. This study was approved by local Ethics Committee.

### Results

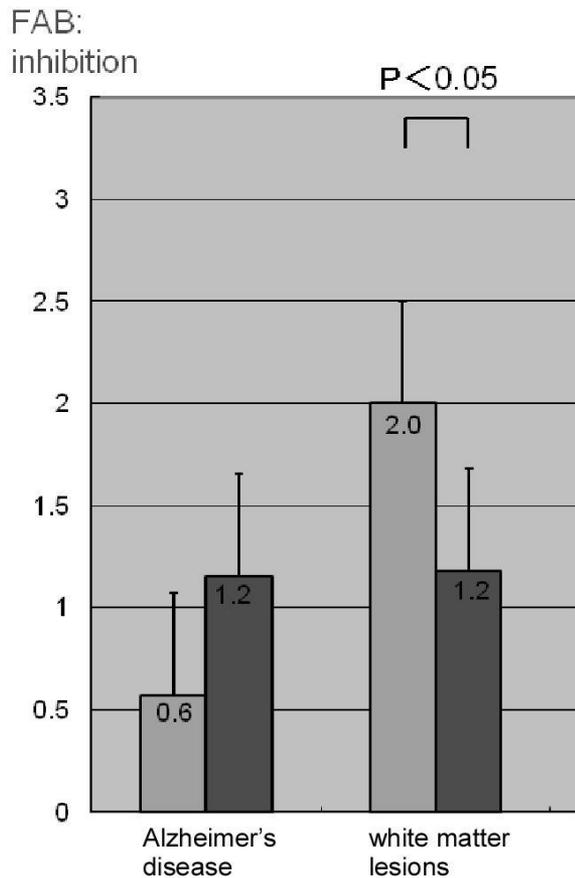
As a result, there was no statistical significant relationship between DO with MMSE score. Similarly, there was no statistical significant relationship between DO with FAB total score. In contrast, among 6 subdomains of FAB, e.g., similarities, lexical fluency, motor series, conflicting instructions, go-no go, and prehension behaviour, there was statistical significant relationship between DO with a go-no go (inhibitory control) task ( $p<0.05$ ) in WML, not in AD.

### Interpretation of results

The present study results indicated that DO is independent from general cognitive function. In contrast, there was close relationship between DO with one category of frontal hypo-function in WML, not in AD. We did not know the exact reason for this. However, this presumably reflects the difference in brain pathology/function: e.g., in AD, parietal-temporal hypo-perfusion is common whereas in WML, frontal hypo-perfusion is common in the previous SPECT studies. One bias is that AD subjects had more severe dementia, which might have interfered with the results. 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, as well as to the underlying mechanism of OAB in dementia patients.

### Concluding message

There is relationship between detrusor overactivity (DO) with frontal cognitive hypo-function in vascular (WML) dementia with OAB.



**Figure 1** There was statistical significant relationship between detrusor overactivity (DO) with a go-no go (inhibitory control) task ( $p < 0.05$ ) in white matter lesions, not in Alzheimer's disease.  
Light bar: DO negative, dark bar: DO positive. Low FAB inhibition points indicate hypo-function.

<b>Specify source of funding or grant</b>	<b>Nothing</b>
<b>Is this a clinical trial?</b>	<b>No</b>
<b>What were the subjects in the study?</b>	<b>HUMAN</b>
<b>Was this study approved by an ethics committee?</b>	<b>Yes</b>
<b>Specify Name of Ethics Committee</b>	<b>Ethics Committee in Sakura Medical Center, Toho University</b>
<b>Was the Declaration of Helsinki followed?</b>	<b>Yes</b>
<b>Was informed consent obtained from the patients?</b>	<b>Yes</b>