

# Inhibitory control task is decreased in vascular incontinence patients

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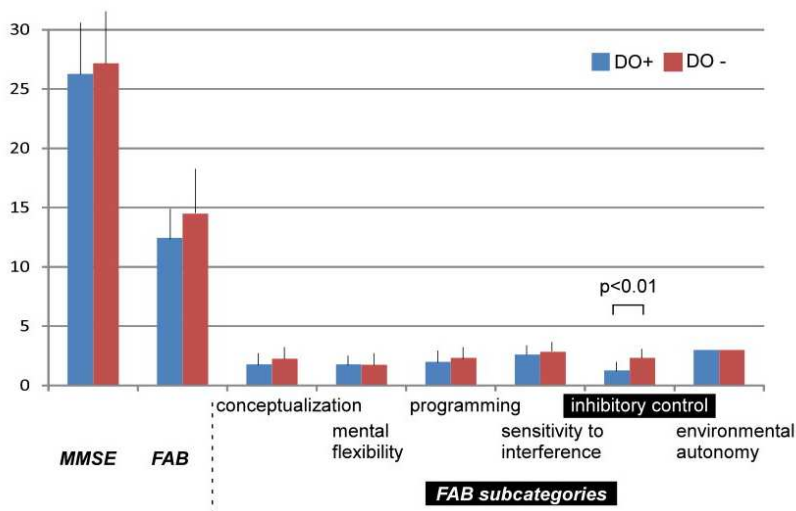
## Hypothesis / aims of study

■ A recent view has emerged that there may be an important cerebral vascular component in the occurrence of elderly incontinence <sup>1</sup>. Patients with white matter changes (WMC) often have 'vascular parkinsonism' and 'vascular dementia' in various combination. Similarly, bladder symptom due to WMC can be referred to as 'vascular incontinence', and this condition can appear as the sole initial symptom in WMC without parkinsonism and dementia. Previously, no detailed reports are available to see the relationship between cognitive function and bladder function in the elderly cohort. Hence we studied the relationship between cognitive task and urodynamic detrusor overactivity (DO) in vascular incontinence patients.

## Study design, materials and methods

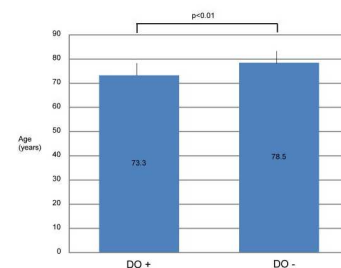
■ 40 patients were recruited. Inclusion criteria are 1) patients who underwent a brain MRI scan due to various complaints and showed WMC as defined more than grade 2/4 of Brant-Zawadzki's 0-4 grading scale, 2) patients who underwent two cognitive tasks that are a routine assessment at our clinic [the Mini-Mental State Examination [MMSE] (general cognitive task), and the Frontal Assessment Battery [FAB] (frontal lobe task) <sup>2</sup>], and 3) patients who underwent urodynamics because of lower urinary tract (LUT) symptoms. Exclusion criteria are 1) concurrent dementia with Lewy bodies, Alzheimer's disease and other diseases that might potentially produce cognitive and LUT symptoms, 2) drugs and 3) apparent prostatic hypertrophy. They were 20 male, 20 female; age 77 [60-89] years.

## Results



	DO+	SD	DO-	SD
mini-mental state examination (MMSE)	24.5	4.6	26.1	4.4
frontal assessment battery (FAB)	12	2.4	13.7	3.7
conceptualization	1.77	1.1	2.2	0.8
mental flexibility	1.5	0.7	1.6	1.2
programming	2	1.0	2.3	1.1
sensitivity to interference	2.5	0.8	2.7	0.8
inhibitory control	1.2	0.7	2	0.9
environmental autonomy	3	na	3	na

na: not applicable  
DO: detrusor overactivity  
SD: standard deviation



## Interpretation & Conclusion

■ In the present study, DO was independent from general cognitive status, e.g., mean MMSE score was normal in patients with WMC; and in patients with DO, DO was not related with total MMSE score or any of its subdomains. This is in accordance with the facts that overactive bladder occurs in otherwise healthy elderly population. In the FAB, the inhibitory control or go-no-go paradigm can be assessed by: not tapping when the examiner taps twice, and not once as was previously asked when examining the sensitivity to interference<sup>3</sup>, that was decreased along with DO. One explanation might be that the bladder is under general inhibitory control concerning decision-making and emotion by the prefrontal cortex. In patients with WMC, this neural network might be impaired, leading to both frontal-type behavior and DO. In order to clarify this issue, larger studies including other frontal lobe tests such as Wisconsin Card Sorting Test are needed. Since 'vascular incontinence' is a part of geriatric incontinence, our study results will shed light to the brain mechanism of geriatric incontinence.

■ Therefore, inhibitory control task is decreased in vascular incontinence patients with DO. This finding suggests that the bladder might be under general inhibitory control; and DO is a result of frontal hypo-function in WMC as reported previously.

### References

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