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EVALUATION OF IMIDAFENACIN ON URINARY SENSATION AND BRAIN FUNCTION USING REAL-TIME MEASUREMENT OF OXYHEMOGLOBIN CONCENTRATION CHANGES IN FRONTAL MICTURITION AREA OF OAB PATIENTS

Hypothesis / aims of study

To investigate imidafenacin's effects on urinary sensation and brain function using real-time measurement of oxyhemoglobin concentration changes in frontal micturition area of OAB patients using near-infrared spectroscopy (NIRS).

Study design, materials and methods

62 patients with overactive bladder (OAB) due to neurologic diseases (25 men, 37 women; mean age, 70 years) underwent a systematized lower urinary tract symptom (LUTS) questionnaire and cognitive tests (Mini-Mental State Examination [MMSE], Frontal Assessment Battery [FAB], and Alzheimer's Disease Assessment Scale cognitive subscale [ADAScog]). 35 of them underwent a urodynamics according to the ICS standards, in 8 of whom we performed NIRS during a urodynamics, before and after administration of 3 months, 0.2 mg/day inidafenacin, a cholinergic agent.

Results

Imidafenacin ameliorated night-time frequency (2.6 to 2.0, $p < 0.05$), urinary urgency (daily to weekly, $p < 0.05$), bladder-related QOL (dissatisfied to mildly dissatisfied, $p < 0.05$) while it did not change cognitive results (MMSE 21.8 to 22.1, FAB 10.7 to 11.1, ADAScog 14.8 to 14.4). Imidafenacin increased a bladder volume at the strong desire to void (SDV) (223 ml to 266 ml, $p < 0.05$) whereas frequency of detrusor overactivity did not change significantly (22/35 to 19/35). In 8 patients who underwent NIRS, imidafenacin also increased a bladder volume at the first sensation (FS) (114 ml to 137 ml) and SDV (149 ml to 207 ml) without changing cognitive results. In those patients, average oxyhemoglobin concentration subtract from start to FS increased whereas that from start to SDV did not change. Increase of subtract from start to FS was prominent in Brodmann's area 8,10 of the upper prefrontal cortex.

Interpretation of results

Previous imaging studies have shown that in OAB patients during bladder storage, frontal cortex was deactivated as compared with control. In the present study, imidafenacin ameliorated bladder sensation, without marked disappearance of detrusor overactivity, without cognitive change. This is presumably brought about by imidafenacin's suppression on the bladder afferent signals by blocking muscarinic receptors, leading to a reversal of frontal deactivation during bladder storage, which might also contribute to an enlarged bladder volume at FS and SDV. However, since this is a small study, clarification with a larger study is needed.

Concluding message

Imidafenacin ameliorated bladder sensation together with oxyhemoglobin concentration increase in frontal micturition area of OAB patients, without cognitive worsening.

K.T.
70 years old male

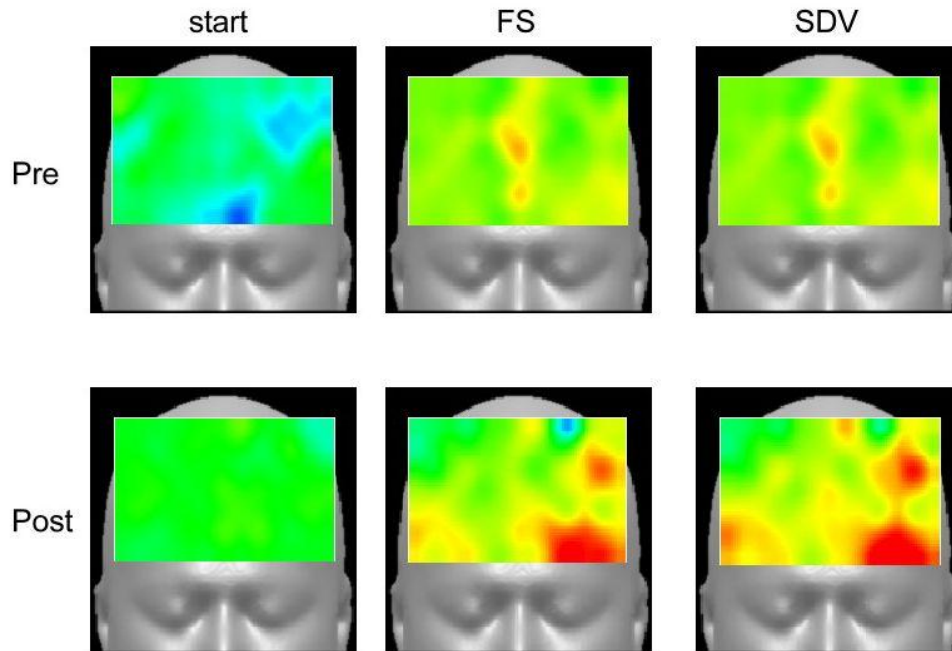


Figure 1 K.T. showing an increase in oxyhemoglobin concentration in frontal micturition area before and after administration of 3 months, 0.2 mg/day inidafenacin. FS: first sensation, SDV: strong desire to void

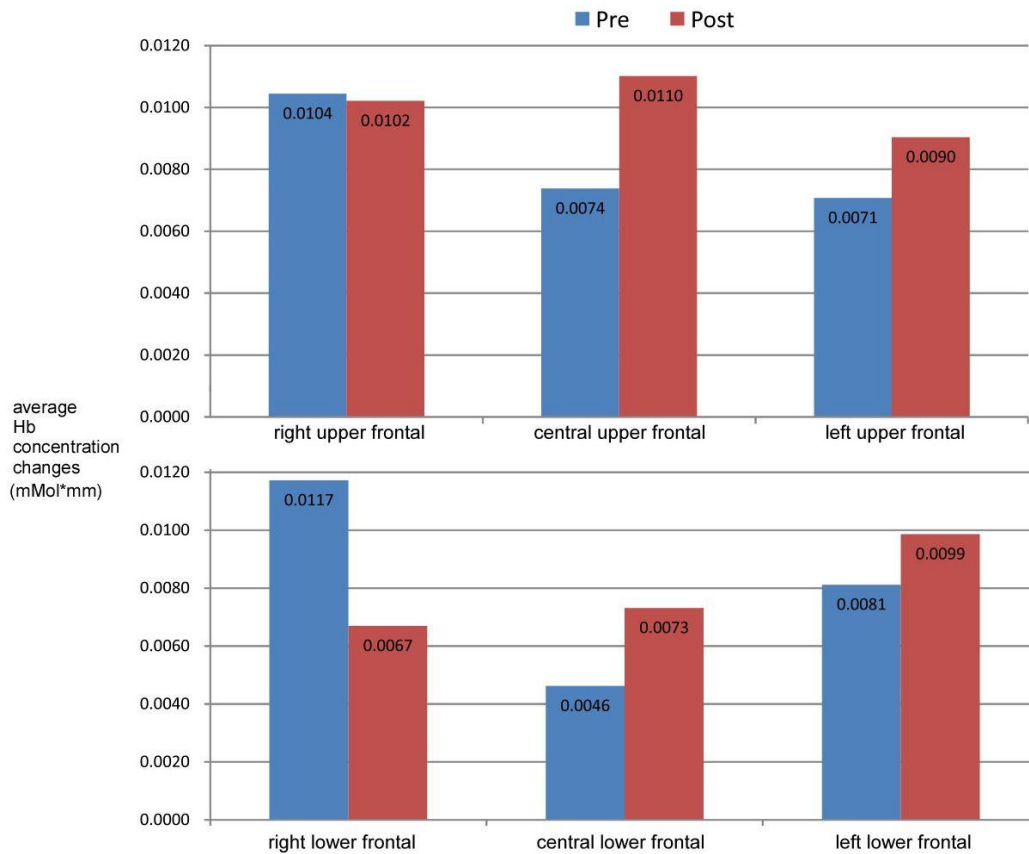


Figure 2 Average oxyhemoglobin concentration subtract from start to the first sensation in 6-divided frontal micturition area before and after administration of 3 months, 0.2 mg/day inidafenacin.

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Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Ethics Committee in Sakura Medical Center, Toho University

Was the Declaration of Helsinki followed?

Yes

Was informed consent obtained from the patients?

Yes
