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SOLIFENACIN AMELIORATED BLADDER SENSATION AND DETRUSOR OVERACTIVITY IN NEUROLOGIC PATIENTS WITHOUT WORSENING COGNITIVE FUNCTION

Hypothesis / aims of study

To investigate solifenacin's effects on bladder sensation and detrusor overactivity in neurologic patients, together with watching cognitive function because solifenacin has anti-cholinergic properties.

Study design, materials and methods

We recruited 8 patients with overactive bladder (OAB as defined by ICS) due to known neurologic diseases (mostly brain/spinal cord disorders and 7 of 8 had detrusor overactivity on urodynamics). They were 3 men, 5 women; mean age, 68 years. We performed urodynamics with 5 grade sensory measurement during bladder filling and cognitive assessment in all subjects before and after administration of 5 mg/day solifenacin succinate for 3 months.

Results

After administration of 5 mg/day solifenacin: OAB was successfully ameliorated in our patients by a systematized questionnaire. Cognitive assessment showed no functional deterioration (Mini-Mental State Examination value 24.9>25.1 [larger, better], Frontal Assessment Battery value 14.1>13.0 [larger, better], Alzheimer Disease Assessment Scale cognitive subscale 9.8>7.5 [smaller, better]). Pressure-flow study showed no apparent deterioration. Urodynamics showed disappearance of detrusor overactivity in 2/7, which mostly appeared after NDV; A 5 grade sensory measure showed that sensation 1 [first sensation (FS)] volume increased (mean 81 ml > 164 ml, p=0.0106), sensation 2 [first intermediate] volume no change (84 ml > 80 ml, no statistical significance), sensation 3 (normal desire to void (NDV)) volume no change (114 ml > 133 ml, no statistical significance), sensation 4 [second intermediate] volume no change (90 ml > 122 ml, no statistical significance), sensation 5 [strong desire to void (SDV)] volume increased (mean 190 ml > 280 ml, p=0.0017).

Interpretation of results

Above results showed that 5 mg/day solifenacin for 3 months successfully ameliorated OAB due to neurologic diseases without worsening of cognitive function. This probably means that solifenacin acted on the bladder without penetrating the blood-brain barrier. Five mg/day solifenacin for 3 months increased bladder volume not only at SDV, but also FS, without influencing NDV and two intermediates. Since detrusor overactivity mostly appeared after NDV, improvement of FS cannot be explained by amelioration of detrusor overactivity alone. Therefore, solifenacin ameliorated OAB presumably by affecting afferent sensory fibers (increased FS volume) and efferent motor fibers (disappearance of detrusor overactivity). The former seemed to be brought about by solifenacin's counter-action against Ach that is released from urothelium during slow bladder filling.

Concluding message

Administration of 5 mg/day 3 months solifenacin ameliorated OAB in neurologic patients presumably by affecting afferent sensory fibers (increased FS volume) and efferent motor fibers (disappearance of detrusor overactivity), without worsening of cognitive function.

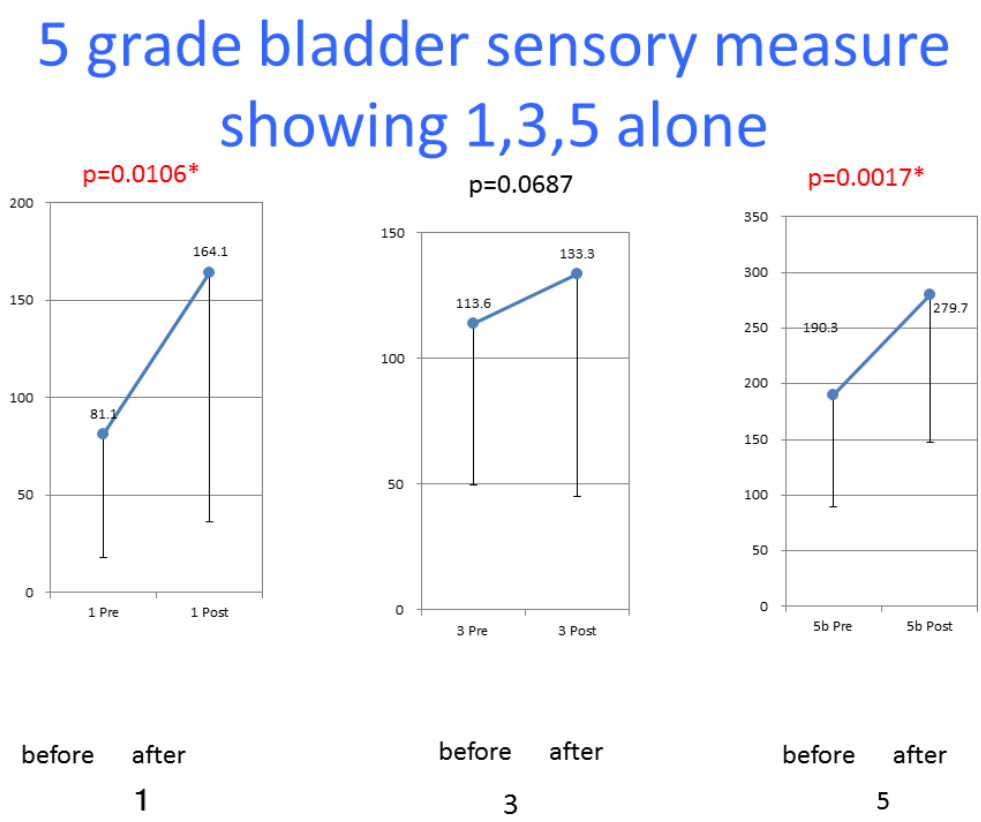

Figure 1. A 5 grade bladder sensory measure before and after administration of 5 mg/day 3 months solifenacin. Solifenacin increased bladder volume not only at strong desire to void (grade 5), but also first sensation (grade 1), without influencing normal desire to void and two intermediates.

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What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Ethics Committee of Sakura Toho university**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**