

Ichiyangi O. ¹, Nishimoto K-I. ², Nagaoka A. ³, Naito S. ⁴, Yagi M. ⁴, Ushijima M. ⁴, Kajinuma A. ¹, Kato T. ⁴, Tsuchiya N. ⁴

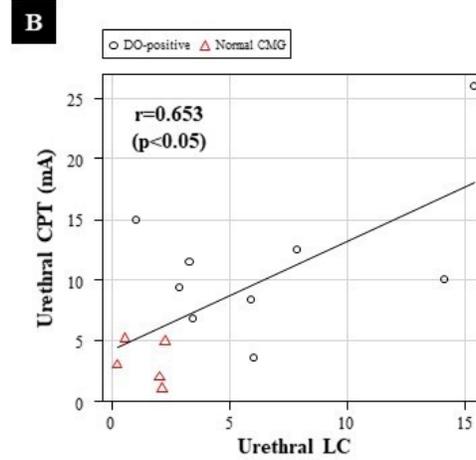
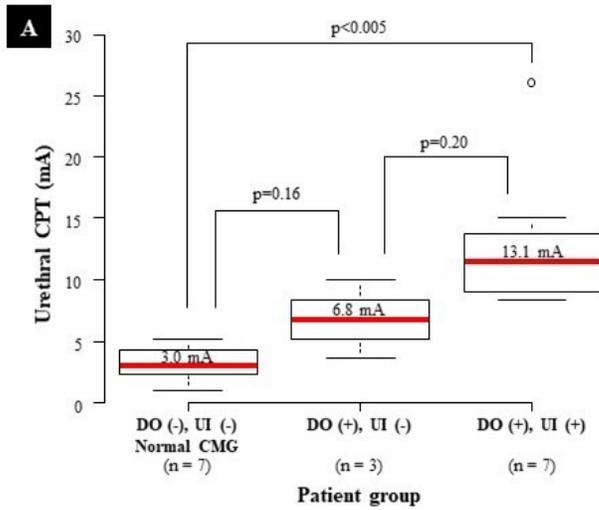
¹Yamagata Prefectural Kahoku Hospital, Dept. of Urology, Kahoku, Japan, ²Seichokai Fuchu Hospital, Dept. of Urology, Izumi, Japan, ³Yonezawa City Hospital, Dept. of Urology, Yonezawa, Japan, ⁴Yamagata University Faculty of Medicine, Dept. of Urology, Yamagata, Japan

Introduction & Objectives: Clinical relevance of urethral sensation in patients with overactive bladder (OAB) remains unclear. We examined relationships between urethral sensation and storage/voiding function in women with detrusor overactivity (DO) by measuring current perception threshold (CPT) in the urethra.

Materials & Methods: We retrospectively examined medical archives of consecutive 27 women with lower urinary tract (LUT) symptoms who received filling cystometry (CMG), uroflowmetry (UFM) and urethral CPT measurement between 2000 and 2015. The patients were divided into two groups with/without DO. Patients with normal CMG were selected as controls from those without DO according to the following criteria: bladder compliance ≥ 12.5 mL/ H₂O, volume < 275 mL at first sensation of filling (FSF), and no comorbidities possibly affecting LUT function. Mucosal sensation of the proximal urethra was evaluated as a least CPT of applied current intensity. Electrical stimulation was transurethrally given mainly to activate C-fiber in 0.5 ms square pulses at 3 Hz. Urethral loss coefficient (LC), reflecting urethral resistance during voiding, was calculated by applying a mathematical model curve-fitted to a UFM waveform (Nishimoto et al., Hinyokika Kyo 52:7-10).

Results: Total 17 women were eligible for the present study (n=7 and 10 for patients with normal CMG and DO, respectively). urge incontinence (UI) was observed in seven of the DO patients, but not in those with normal CMG. Neither urethral stenosis nor detrusor-sphincter dyssynergia were observed in the entire cohorts. LC cannot be calculated in 3 cases (n=1 and 2 for groups with DO and normal CMG, respectively) due to poor curve-fitting of the mathematical model. Urethral CPT and LC was significantly higher in patients with DO than those with normal CMG. However, FSF and maximum bladder capacity, peak flow, voided volume, and post-void residual did not significantly differ between the two groups. Median urethral CPT significantly increased in patients with both DO and UI than in those without (post hoc test, $p < 0.05$; Fig.1). The CPT values were

correlated with LC ($r=0.64$, $p<0.05$; Fig.2), but not with FSF ($r=0.35$, $p=0.17$).



Conclusions: In women, urethral C-fiber afferents may become hyposensitive independently of bladder sensation as the detrusor gets overactive with UI in storage phase. In voiding, the C-fiber hyposensitivity may associate with increase in urethral resistance.