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EVALUATION OF BLADDER SENSATION DURING BLADDER FILLING IN PARKINSON'S DISEASE

Hypothesis / aims of study

Patients with Parkinson's disease (PD) frequently have lower urinary tract dysfunction (LUTD). In the LUTD, storage symptoms such as daytime/nocturnal frequency, urinary urgency, and urge incontinence are most common. Detrusor overactivity (DO) has been reported in previous urodynamic studies (UDSs) in patients with PD and is considered to be the underlying cause of storage symptoms, in particular urinary urgency. However, it is not known how patients with PD feel bladder sensation during storage phase in detail, and little is known whether the bladder sensation in patients with PD is normal or abnormal. Bladder sensation in UDS is usually defined using bladder volume during bladder filling. Abnormal voiding desires are observed but unconsidered during UDS, because there is no reasonable scale of voiding desire. We set up a new parameter and have been trying to evaluate the intensity of voiding desire. In this time, we evaluate the intensity of voiding desire during bladder filling in patients with PD using a new parameter multiplied urodynamic parameters by bladder sensation at the occasion.

Study design, materials and methods

We recruited 57 patients with PD, who were informed consent; 11 patients with normal bladder sensation, 25 patients without DO, sensory urgency (reduced bladder volume without DO), 21 patients with DO. 30 women and 27 men; mean age 61.3 years (52 - 75). We observed each bladder volume at first sensation of bladder filling (FS), first desire to void (FDV), normal desire to void (NDV), strong desire to void (SDV), and maximum desire to void (MDV). And we simultaneously measured the intensity of voiding desire at the occasion used visual analog scale (VAS) which assumed 10 points is equal to maximum desire to void in daily life.

Results

Patients with normal bladder sensation showed gradually and linearly increase in voiding desire (Figure 1), the change rate of voiding desire between FDV and MDV was 0.027 ± 0.011 . Patients with DO showed acutely and extremely increase in voiding desire from the beginning of DO (Figure 2), the change rate of voiding desire between FDV and MDV was 0.061 ± 0.030 . Patients with sensory urgency (reduced bladder volume without DO) also showed acutely and linearly increase in voiding desire (Figure 3), the change rate of voiding desire between FDV and MDV was 0.056 ± 0.016 .

Interpretation of results

The relationship between bladder volume at each occasion and the intensity of voiding desire using VAS quantitatively showed how bladder sensation increased during bladder filling in patients with PD. The slope of voiding desire in patients with DO or sensory urgency is more extreme than patients with normal bladder sensation.

In addition, these findings showed that PD patients had abnormal bladder sensation not only by DO but also increased bladder sensation.

Concluding message

We showed a new parameter to evaluate bladder sensation and voiding desire during bladder filling in UDS. This new parameter was useful to evaluate abnormal bladder sensation and voiding desire in detail in PD patients. This parameter shows that PD patients may have not only efferent abnormality but also afferent abnormality in the nervous system of lower urinary tract function.

Disclosures

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