Detrusor Overactivity and Urethral Dysfunction in a Man without Bladder Outlet Obstruction

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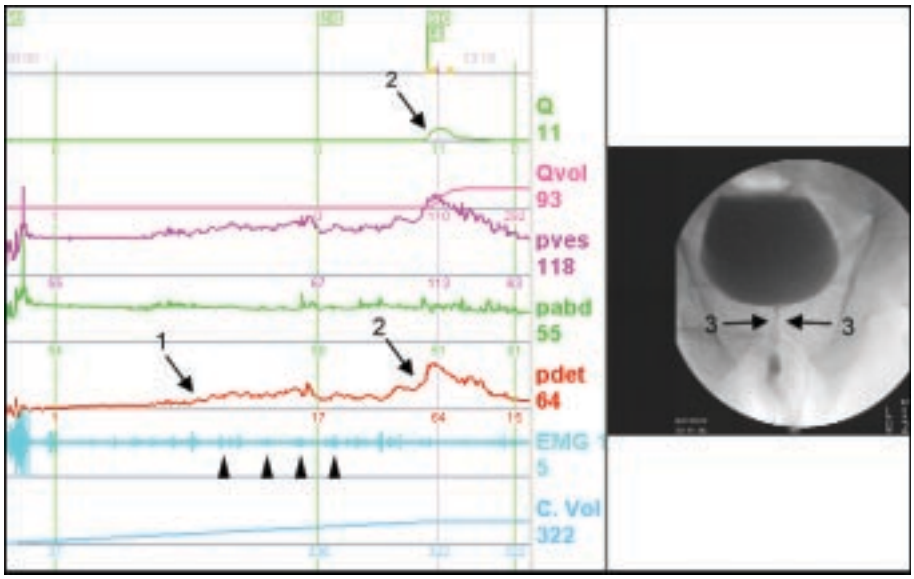

BRIEF HISTORY

A 47 year-old man had frequency, urgency, a slow stream and residual urine sensation for about 1 year. He had been quite healthy in the past 5 years, and had no history of surgery or medical disease such as diabetes or hypertension. The patient has been treated with tolterodine 4 mg daily for 3 months, but the lower urinary tract symptoms (LUTS) persisted.

CLINICAL INVESTIGATION

The man was physically normal. The bulbocavernous reflex was intact and he could contract his anal sphincter voluntarily. A urinalysis showed no abnormalities and transrectal sonography of the prostate showed a total prostate volume (TPV) of 42 mL, and a transition zone index (TZI) of 0.3. His prostatic specific antigen (PSA) level was 1.07 ng/mL. The maximum flow rate (Qmax) was 11 mL/s, voided volume was 210 mL and postvoid residual volume was 74 mL.

URODYNAMIC FINDING

Videourodynamic study revealed uninhibited detrusor contractions after the first sensation of bladder filling at 112 mL (arrow 1). Although he tried to inhibit the detrusor contractions by increasing external sphincter activity (arrowheads), frequent detrusor contractions persisted and he finally voided at a capacity of 322 mL with an urgency bladder sensation (arrows 2). The voiding detrusor pressure was 58 cmH_2O, Qmax was 11 mL/s and voided volume was 292 mL. During voiding, the bladder neck was open, but the proximal urethra was narrow (arrows 3).

CLINICAL DIAGNOSIS AND MANAGEMENT

Since the TPV, TZI and PSA were all low, indicating prostate enlargement did not contribute to his voiding problems, the cause of his LUTS was possibly detrusor overactivity. Frequent detrusor contractions result in increased urethral sphincter (both smooth muscle and striated muscle) activities during bladder filling, possibly through increased spinal reflex potentiation between the bladder and external urethral sphincter. When the patient was allowed to urinate, the urethral muscle still could not relax adequately. Therefore, the flow rate was slow during voiding and the patient could not void completely. This phenomenon is frequently noted in patients with detrusor overactivity. These patients also present with storage LUTS (frequency urgency and nocturia) and empty LUTS (slow stream, difficult urination and residual urination). Treatment with antimuscarinics is usually adequate to inhibit detrusor overactivity and resume spontaneous voiding. However, if an antimuscarinic fails to eradicate LUTS, adding an alpha blocker may be necessary to relax urethral sphincter activity and resume normal voiding.