

Parkinson's disease and prostate hyperplasia: which is more contributing to overactive bladder?

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Objectives

■ To investigate which is more contributing to elderly overactive bladder (OAB) / urinary incontinence in Parkinson's disease (PD)/ benign prostatic hyperplasia (BPH).

Methods

■ We had 177 patients. Regarding the prostate volume, we divided them into 5 groups: BPH without PD, 12; male PD with large BPH (ultrasound prostate volume >30 ml), 20; male PD with small BPH (20-30 ml), 11; male PD without BPH, 46; and female PD, 88. We performed a urinary symptom questionnaire and a urodynamics. Statistics was performed using Student's *t*-test and Spearman's rank correlation coefficient test.

Results

■ 1) Frequency of detrusor overactivity (DO) in PD without BPH (male 61.3%, female 73.3%) was almost the same with that in BPH without PD (male 60%). However, 2) bladder volume at the first sensation ($p < 0.01$), at the normal desire to void ($p < 0.01$) and at bladder capacity ($p < 0.01$, 0.05) in PD without BPH were significantly smaller than that in BPH without PD. 3) Phasic DO in PD without BPH (41.9-64.3%) was more common than that in BPH without PD (20%). 4) 40.2% of male PD had concurrent BPH (mean volume 39 ml; almost the same with that [45 ml] in pre-surgical BPH without PD). 5) In PD, disease duration and HY motor grade had positive impact on smaller bladder capacity ($p < 0.05$ and $p < 0.01$, respectively), while age did not affect LUT function.

| gender | diseases | detrusor overactivity (phasic) (%) | detrusor overactivity (terminal) (%) | obstruction (%) | first sensation volume (ml) | normal desire to void (ml) | strong desire to void (ml) |
|--------|--|------------------------------------|--------------------------------------|-----------------|-----------------------------|----------------------------|----------------------------|
| male | prostate hyperplasia | 20 | 40 | 50 | 163 | 265.6 | 362.1 |
| male | PD + prostate hyperplasia (p. volume >30 ml) | 64.3 | 28.6 | 44.4 | 124.3 | 171.2 **: $P < 0.01$ | 261 *: $P < 0.05$ |
| male | PD + prostate hyperplasia (p. volume 20-30 ml) | 50 | 37.5 | 37.5 | 112.3 | 155.6 **: $P < 0.01$ | 236.5 *: $P < 0.05$ |
| male | PD | 41.9 | 19.4 | 9.8 | 117.6 | 173.8 **: $P < 0.01$ | 245.9 **: $P < 0.01$ |
| female | PD | 46.7 | 26.6 | 4.4 | 105.9 **: $P < 0.01$ | 154 **: $P < 0.01$ | 267.1 *: $P < 0.05$ |

Table 2 Detrusor overactivity and bladder sensation between prostate hyperplasia and PD.

PD: Parkinson's disease.

| | Parkinson's disease (total) | detrusor overactivity (phasic) (%) | detrusor overactivity (terminal) (%) | obstruction (%) | first sensation volume (ml) | normal desire to void (ml) | strong desire to void (ml) |
|------------------|-----------------------------|------------------------------------|--------------------------------------|-----------------|-----------------------------|----------------------------|----------------------------|
| age (years) | < 70 | 61.5 | 19.1 | 0 | 103.3 | 153.1 | 262.7 |
| | > 70 (older) | 31.4 | 25.7 | 10 | 115.4 | 167.3 | 257.9 |
| duration (years) | < 2 | 60 | 10 | 5.6 | 100.8 | 174.1 | 306.8 |
| | > 2 (longer) | 35 | 35 | 0 | 99 | 148.2 | 232.9 |
| HY motor grade | 1-2 | 50 | 16.7 | 9.1 | 100.5 | 166.5 | 288.9 |
| | 3-5 (severer) | 13.2 | 18.4 | 6.9 | 97.4 | 147 | 217.8 |

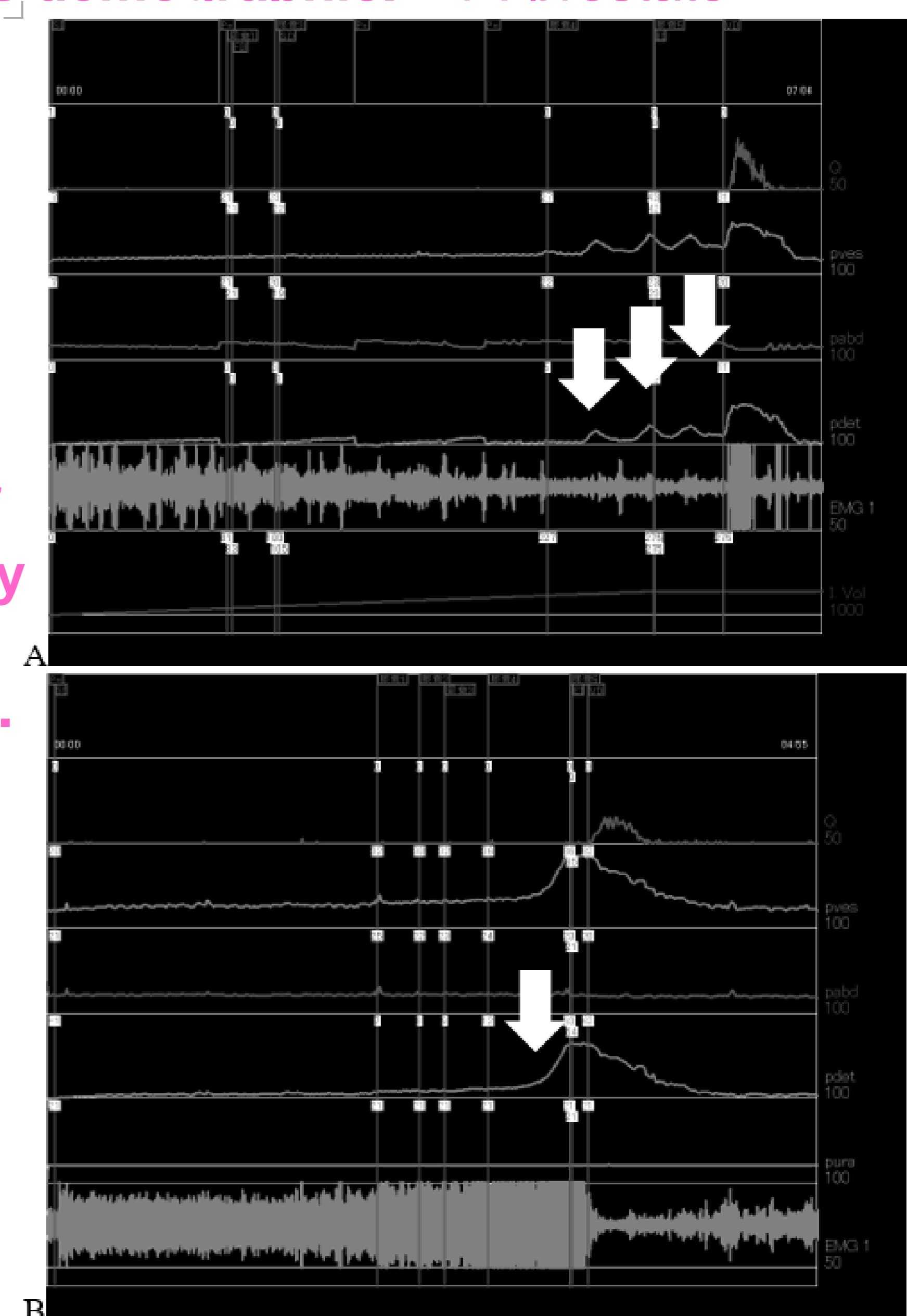
Table 3 Detrusor overactivity and bladder sensation in between age, duration and HY motor grade in PD.

HY: Hoehn and Yahr.

| gender | diseases | mean age (years±SD) | No. of patients |
|--------|---|---------------------|-----------------|
| male | prostate hyperplasia (p. volume > 20 ml) | 70.6±7.0 | 12 |
| male | Parkinson's disease + prostate hyperplasia (p. volume >30 ml) | 73.5±6.3 | 20 |
| male | Parkinson's disease + prostate hyperplasia (p. volume 20-30 ml) | 70.5±8.2 | 11 |
| male | Parkinson's disease (p. volume < 20 ml) | 68.8±8.7 | 46 |
| female | Parkinson's disease | 70.2±6.7 | 88 |
| total | | 70.3±7.1 | 177 |
| male | | 71.2±7.2 | 89 |
| female | | 70.2±6.7 | 88 |

Table 1 Patients demographic. P: prostate

•Figure 1. Pattern of detrusor overactivity during a filling phase urodynamics.
•A. phasic type (arrows), B. terminal type (arrow).



■ (Pathophysiology) The mechanism to determine either phasic or terminal DO remains to be answered, and future studies are warranted.

■ (Clinical relevance) 1) Alpha blocker for BPH may worsen postural hypotension in PD/BPH patients, while alpha-adrenergic agonists for postural hypotension may worsen urinary retention. 2) Prostatic surgery is not contraindicated in PD/BPH patients, but we should exclude multiple system atrophy carefully. 3) It is highly recommended that urologists and neurologists collaborate together for such patients.

■ BPH and PD might occur together. Bladder volume in PD is significantly smaller than that in BPH, indicating that PD is more contributing to elderly OAB/ urinary incontinence. Phasic DO might suggest PD.