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# CORRELATION OF URODYNAMIC FINDINGS AND UPPER URINARY TRACT DILATATION IN PATIENTS WITH BPH

**Aims of Study:** We evaluated the urodynamic findings and upper urinary tract status in men with BPH to determine urodynamic risk factors for upper urinary tract dilatation in BPH.

**Methods:** Seventy-six men (age 47-88, mean 70 years) with BPH underwent pressure flow study (PFS) and upper urinary tract examination. Upper urinary tract was checked by either intravenous pyelography, renal ultrasonography or computed tomography. International Prostate Symptom Score (IPSS), upper urinary tract status, uroflowmetry, filling cystometry and PFS parameters were compared among 3 groups having different upper urinary tract status.

**Results:** Six patients (7.9%) showed hydronephrosis (group H), while definite ureteral stasis and dilatation were noted in 8 (11%, group S). Sixty-two had normal upper urinary tract (group N). There were 3 men (4.0%) who had abnormal serum creatinine level (greater than 1.1mg/dl, 1 in group S and 2 in group N), which were presumably due to underlying renal parenchymal disease, but not examined further. Maximal flow rate in group H ( $5.6 \pm 2.4$  ml/s) and group S ( $6.6 \pm 2.8$  ml/s) was lower than in group N ( $9.7 \pm 4.5$  ml/s,  $P < 0.05$ ). Detrusor instability was noted in all (100%) of Group H, 50% of Group S and 36.5% of group N. Bladder storage pressure in group H ( $23.5 \pm 15.5$  cmH<sub>2</sub>O) was higher than group S ( $12.8 \pm 8.66$  cmH<sub>2</sub>O) and group N ( $11.0 \pm 7.58$  cmH<sub>2</sub>O). Group H and S had lower vesical compliance ( $26.3 \pm 11.5$ ,  $28.6 \pm 15.0$  ml/cmH<sub>2</sub>O, respectively) than group N ( $43.6 \pm 29.4$  ml/cmH<sub>2</sub>O,  $P < 0.05$ ). Maximal detrusor pressure on voiding was  $112.4 \pm 39.7$  cmH<sub>2</sub>O in group H and  $79.9 \pm 12.5$  cmH<sub>2</sub>O in group S, which were statistically higher than in group N ( $55.5 \pm 21.8$  cmH<sub>2</sub>O). All patients in group H and S were defined obstructed by Abrams-Griffiths' nomogram. However,

N. Yamashita, K. Ameda, H. Kakizaki, S. Matsuura, H. Tanaka, R. Machino, and T. Koyanagi in group N only 42% of patients were obstructed, 48% equivocal and 10% unobstructed. In contrast with the significant differences in urodynamic parameters stated above, there was no significant difference in IPSS among the 3 groups ( $15.2 \pm 7.3$ ,  $17.9 \pm 9.0$  and  $16.8 \pm 6.9$  in group H, S and N, respectively).

Conclusions: Upper urinary tract could be at risk when both storage and voiding pressures are elevated. The risk seems to be enhanced if detrusor instability is accompanied. Although upper urinary tract dilatation alone rarely leads to elevated serum creatinine in the absence of underlying renal disease, it should be treated even in the less symptomatic patients with BPH before renal dysfunction takes place in a longer term.