ULTRASOUND MEASUREMENT OF DETRUSOR THICKNESS TO PREDICT LOWER URINARY TRACT OBSTRUCTION IN THE ELDERLY MEN

Hypothesis / aims of study
To evaluate the relationship between the detrusor thickness and bladder outlet obstruction (BOO) in elderly men with benign prostatic hyperplasia (BPH).

Study design, materials and methods
One hundred and six cases of patients with BPH were included and the urodynamic examination was performed, the diagnosis of bladder outlet obstruction is complied with urodynamic results. Obstruction was defined according to the Abrams-Griffiths nomogram (A-G index≥40) and the grade of LinPURR (≥Ⅱ). When bladder capacity reaches 150 ml, the detrusor thickness was measured by abdominal B ultrasound.

Results
Compared to non-obstructed group, the maximum flow rate was significantly reduced (p<0.01), and the residual urine volume and maximum detrusor pressure was significantly increased (p<0.01) in obstructed group (60 cases of unobstructed patients VS 26 cases of obstructed patients). Detrusor thickness was positively correlated with maximum detrusor pressure, but negatively correlated with maximum flow rate, mean flow rate and voided volume. There was significantly difference (p<0.05) in detrusor thickness (3.0±0.2 mm in obstructed group VS 2.5±0.2 mm in non-obstructed group). According with standard diagnosis of detrusor thickness≥3.0mm, it had a sensitivity of 90% , specificity of 84.6% , positive predictive value of 93.1% and negative predictive value of 78.6% .

Interpretation of results
The formation of benign prostatic hyperplasia inducing lower urinary tract obstruction inducing the detrusor hypertrophy, which has been demonstrated by ultrasound examination as it can be manifested as thickening of the detrusor. It has been reported that the deposition of collagen and elastic fiber degradation contributes the bladder wall thickness. Urinary bladder smooth muscle hypertrophy and distortion, intracellular organelle swelling, vacuolization and deregulation, obviously enlarged intercellular spaces were observed under electron microscopy.

Concluding message
Detrusor thickness 3.0 mm or greater could be used to predict BOO in old man with PPH.

References