

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 \geq 40) and the grade of LinPURR (\geq 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 \geq 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 predicte BOO in old man with PPH.

References

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3. Manieri C,Carter SS,RomanoG,et al.The diagnosis of bladder outlet obstruction in Men by ultrasound measurement of bladder wall thickness.J Urol 1998;159: 761-5.

Specify source of funding or grant	No funding.
Is this a clinical trial?	Yes
Is this study registered in a public clinical trials registry?	No
Is this a Randomised Controlled Trial (RCT)?	Yes
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	The first Teaching Hosipital of Zhengzhou University REC
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes