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THE CLINICAL SIGNIFICANCE OF BLADDER CONTRACTILITY INDEX IN TREATING BPH

Hypothesis / aims of study

benign prostatic hyperplasia (BPH) is a common disease in old men, which is also the primary reason for causing bladder outlet obstruction and LUTS. Some people need surgery. But many old men may have chronic urinary retention, diabetes mellitus or neurological disease. These can result in detrusor dysfunction and the urinary symptoms are not improved postoperatively. In our study, all patients with BPH undergo urodynamic examination preoperatively. We evaluate the detrusor function by analyzing bladder contractility index (BCI) to explore clinical significance of BCI in treating BPH.

Study design, materials and methods

We retrospectively analyze the clinical and urodynamic data of 102 cases of patients with BPH from 2008 to 2009 in our department. The age ranges from 59 to 89. Through medical history, signs, digital examination of rectum, PSA and ultrasound examination, all cases are diagnosed benign prostatic hyperplasia. Among these cases, 24 cases are complicated with diabetes mellitus, and 13 cases are complicated with neurological diseases. There are also 2 cases underwent pelvic surgery. 12 cases have bilateral hydronephrosis and ureteric dilatation through ultrasound examinations.

Results

The urodynamic data are as follows. Residual urine was 60-600ml. 18 cases had reduced bladder compliance, and 29 cases had bladder overacitivity. Bladder capacity was 150-600ml. There are 12 cases whose Qmax was 0 ml/s, 82 cases whose Qmax was 0-15 ml/s, and 9 cases whose Qmax was >15ml/s. The bladder contractility index was calculated with the formula BCI=pdetQmax+5Qmax, which was analyzed combined with obstruction status suggested by P-Q nomogram. There were 30 cases with BCI <100. Among these cases, 10 cases had obstruction, which all underwent TURP surgery. Postoperatively they were prolonged urethral catheterization time and take pyridostigmine bromide orally. They were all obtained satisfying therapeutic effect. 8 cases were suggested unobstruction and equivocal status and took pyridostigmine bromide orally. There were also 12 cases which were not detected P-Q nomogram because of acontactile detrusor. They underwent urethral catheterization for two weeks and had urodynamic examination again. 2 cases were suggested obstruction and underwent TURP, which have obtained good effect postoperatively. 2 case were suggested unobstruction and equivocal status and took pyridostigmine bromide continually. P-Q nomograms were still undetected in 8 cases, and they underwent clean intermittent self-catheterization or vesicostomy. There were 72 cases with>100. 56 cases were suggested obstuctions and underwent TURP, which had good effect. 16 cases were suggested unobstuction or equivocal status, which were told to watchful waiting.

Bladder contractility index	Obstruction (AG>40)	Equivocal (20<AG<40)	Unobstruction (AG<20)	P-Q nomogram undetected
BCI<100	10	2	6	12
BCI 100-150	11	8	2	0
BCI>150	45	5	1	0
Total	66	15	9	12

Interpretation of results

Treatments for BPH include watchful waiting, medication and surgery. Although surgery such as TURP is the most important method to treat BPH, symptoms in some patients are not improved postoperatively. In our study, for patients with BPH we practice not only pressure-flow study and analyze obstruction routinely through P-Q nomogram, but also measure the BCI and help to analyze the detrusor contractility. BCI greater than 150 is strong, BCI less than 100 is weak, and BCI of 100 to 150 is normal contractility (1). There are 66 cases suggested obstruction, and among them BCI in 10 cases were less than 100. The detrusor dysfunction may result from long-term chronic bladder outlet obstruction. For these patients if we do TURP surgery only, which could resolve obstruction effectively, but the urination disorders still exist because of detrusor dysfunction and the voiding symptoms are not improved. So besides operation, we prolong urethral catheterization time and use pyridostigmine bromide simultaneously to promote recovery of the detrusor function. They have obtained satisfying therapeutic effect. For patients who has obstruction and BCI>100, we could do the surgery routinely. For the patients with acontactile detrusor, although they may have bladder outlet obstruction resulting from BPH, TURP surgery is definitely contraindicated. These patients could undergo urethral catheterization and evaluate the recovery of detrusor function. If the detrusor function is not recovered, Clean intermittent self-catheterization or vesicostomy should be used.

Concluding message

When treating BPH, in addition to determine bladder outlet obstruction through urodynamic examinations, we can also measure baldder contractility index to evaluate the detrusor function. BCI has a very important clinical significance in determining surgery indication and judging postoperative effect in advance, and it can improve success rate of the surgery.

References

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