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COMPARING PUMA WITH OTHER ADVANCED URODYNAMIC METHODS IN THE DIAGNOSIS OF BLADDER OUTLET OBSTRUCTION IN MEN WITH BENIGN PROSTATIC HYPERTROPHY

Aims

Many advanced urodynamic methods are used to assess bladder outlet obstruction (BOO) in patients with benign prostate hypertrophy (BPH). This study compared five of these methods to see if they agree and to determine which best detects obstruction.

Methods

94 patients (mean age 65.8±6.9) with BPH were recruited to the study. Twenty had already undergone transurethral resection or transurethral incision of the prostate. Exclusion criteria were abdominal straining during the P/F study. All patients underwent a clinical examination, ultrasound scan and urodynamics with a P/F study according to ICS criteria. Data were analysed a) according to the urodynamics operator's opinion; b) by the provisional ICS method; c) Shäfer's Diagram; d)URA and e)PUMA (1,2,3). Statistical analysis: the "K" test was used to assess agreement between methods (see table 1 for the k-test reference values). Sensitivity and specificity of each method in detecting obstruction were determined on the basis of agreement between 3/5 methods.

Results

The results were not always in agreement because of the different systems of classification as table 2 shows. Using the K test, table 3 shows agreement ranged from moderate to excellent in patients classified as "obstructed" and "non obstructed". Table 4 reports sensitivity, specificity and overall diagnostic capacity expressed in percentages for each method.

Conclusions

Table 2 shows obstruction is present in 54 to 73 patients (mean 61.2) according to the method used. PUMA with UE> 50 classified 61 patients as obstructed which came closest to the mean. The operator's opinion which identified 23 non-obstructed patients and Shäfer's Diagram with 21, came closest to the mean of 22.8. The discrepancies depend on the different hypotheses on which the methods are based and the equations used to define obstruction, non-obstruction, doubt and slight obstruction. Agreement between methods is excellent or good except for Shäfer's Diagram which was in moderate agreement with the others. In fact 18/73 obstructed patients according to Shäfer's Diagram were classified as class II urethral resistance and were partly considered as non obstructed by the other methods. PUMA and Shäfer's Diagram emerged as having best overall diagnostic capacity for obstruction with a good balance between sensitivity and specificity.

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REFERENCES

1. Standardization of terminology of lower urinary tract function: pressure-flow studies of voiding, urethral resistance, and urethral obstruction. Neurourol Urodynam 16:1-18, 1997
2. The Perugia Urodynamic Method of Analisys (PUMA) II: clinical application . Urodinamica 7:13-32, 1997
3. A new advanced method of urodynamic analysis applied clinically and compared with other advanced methods. Neurourology and Urodynam. In press, 2002

Tab. 1 "K" test reference values

K	Agreement
0.0-0.2	Poor
0.2-0.4	Sufficient
0.4-0.6	Moderate
0.6-0.8	Good
0.8-1.0	Excellent

Tab. 2 Results of each advanced urodynamic method

	OBSTRUCTION	DOUBT	MODERATE OBSTRUCTION	NO-OBSTRUCTION	TOTAL
PUMA	61		22	11	94
UROD.	64	7		23	94
ICS	54	21		19	94
SHÄFER	73			21	94
URA	54			40	94
MEAN	61.2	14	22	22.8	94

Tab. 3 Agreement between methods (K-test)

	K OBSTRUCTION				K NO-OBSTRUCTION			
	PUMA	UROD	ICS	SHÄFER	PUMA	UROD	ICS	SHÄFER
UROD.	0,74				0.58			
ICS	0.67	0.55			0.61	0.69		
SHÄFER	0.54	0.60	0.56		0.54	0.60	0.56	
URA	0.80	0.64	0.87	0.56	0.80	0.64	0.87	0.56

Tab. 4 Sensitivity, specificity and overall diagnostic capacity

	BLADDER OUTLET OBSTRUCTION				
	URA	ICS	UROD.	PUMA	SHÄFER
SENSITIVITY	90	86.7	98.3	100	100
SPECIFICITY	100	95	85	95	95
OVERALL DIAGNOSTIC CAPACITY	92.5	88.7	95	98.7	98.7