142

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CHARACTERISTICS OF VOIDING DYSFUNCTION IN RENAL TRANSPLANT RECIPIENTS.

Aims of study
Patients with end-stage renal disease who experienced prolong oliguria can develop bladder function complications after transplantation. The high intra-vesicle pressure was believed contribute to renal impairment, thus early detection was particularly important. The International Prostate Symptoms Score (IPSS) was widely used to evaluate lower urinary tract symptoms (LUTS) and easily perform. This study aims to present the urodynamic characteristics of patients with lower urinary tract symptoms (LUTS) after renal transplantation.

Study design, materials and methods
A total of 66 patients with LUTS completed the International Prostate Symptoms Score (IPSS) questionnaire after undergoing renal transplant surgery. All of the patients were evaluated by a detailed urodynamic study, including uroflowmetry, cystometry, electromyography and pressure-flow. Patients were stratified according to gender and subgrouped by IPSS values to compare the urodynamic parameters.

Results
Table 1. Demographics and International Prostate Symptoms Score (IPSS) of renal transplantation recipients according to gender.

	Male (N=37) n (%)	Female (N=29) n (%)	P**
Age (year)*	54.6±10.8	50±10	0.09
Post-transplantation period (months)	23.6±27.7	16.6±11.2	0.27
LUTS			
Frequency	26(71)	19(66)	
Urgency	2(5)	3(10)	
Nocturia	1(3)	1(3)	
Weak stream	2(5)	2(7)	
Intermittency	2(5)	2(7)	
Incomplete emptying	4(11)	2(7)	
IPSS			
Empty score	9.8±4.3	7.1±5.6	0.01
Storage score	7.2±3.5	7.8±5.4	0.10
Total score	15.9±7.3	14.8±7.4	0.60
Severity			
Mild (IPSS 0-7)	6(16)	5(16)	
Moderate (IPSS 8-19)	18(49)	16(56)	
Severe (IPSS 20-35)	13(35)	8(28)	
QoL	3.6±1.1	2.9±1.1	

*Mean±SD, **Student t test, LUTS: lower urinary tract symptoms, IPSS: International Prostate Symptoms Score, QoL: quality of life.

Table 2. Urodynamics of renal transplantation recipients according to gender.

	Male (N=37)	Female (N=29)	P**
Uroflowmetry			
Qmax (ml/sec)*	11.4±4.6	15.6±7.2	0.007
Voided volume (ml)*	213.9±115.0	235.0±126.0	0.50
Flow time (sec)*	49.0±24.0	50.0±27.0	0.50
PVR (ml)*	69.0±60.0	42.0±37.0	0.04
Cystometry			
First desire to void (ml)*	202.8±103.0	195.0±82.4	0.74
Maximum cystometric capacity (ml)*	268.9±117.7	252.8±91.2	0.80
Bladder compliance (ml/cmH20)*	11.2±9.3	16.6±23.8	0.23
Pressure flow studies*			
Qmax (ml/sec)*	12.5±4.6	16.5±7.2	0.01
PdetQmax (cmH20)*	31.9±15.9	28.7±14.8	0.40

*Mean±SD, **Student t test; Qmas: Maximum urine flow rate, PVR: post void residual, PdetQmax: detrusor pressure at maximum flow

Table 3. Urodynamics of female renal transplantation recipients according to IPSS.

	IPSS>7 (N=24)	IPSS≦7 (N=5)	P**
Uroflowmetry			
Qmax (ml/sec)*	15.6±7.7	15.7±4.7	0.71
Voided volume (ml)*	238.8±126.5	217.0±141.6	0.86
Flow time (sec)*	47.8±28.3	31.6±14.8	0.27
PVR (ml)*	43.7±40.5	34.0±20.7	0.88
Cystometry			
First desire to void (ml)*	203.4±86.5	154.6±45.5	0.22
Maximum cystometric capacity (ml)*	255.5±97.0	240.0±63.3	0.64
Bladder compliance (ml/cmH20)*	18.7±25.7	6.5±3.4	0.51
Pressure flow studies*			
Qmax (ml/sec)*	16.3±7.6	17.4±5.3	0.52
PdetQmax (cmH20)*	28.1±14.7	31.6±16.3	0.54

*Mean±SD, **Mann-Whitney U-Wiconxon rank-sum test; Qmas: Maximum urine flow rate, PVR: post void residual, PdetQmax: detrusor pressure at maximum flow

Table 4. Urodynamics of Male renal transplantation recipients according to IPSS.

	IPSS>7 (N=31)	IPSS≦7 (N=6)	P**
Uroflowmetry			
Qmax (ml/sec)*	11.4±5.2	17.5±3.5	0.009
Voided volume (ml)*	192.0±95.0	348.0±99.6	0.02
Flow time (sec)*	46.3±24.8	47.7±26.4	0.84
PVR (ml)*	71.3±62.3	36.7±24.2	0.07
Cystometry			
First desire to void (ml)*	182.9±80.3	294.8±140.5	0.04
Maximum cystometric capacity (ml)*	235.5±97.9	373.8±127.0	0.01
Bladder compliance (ml/cmH20)*	11.5±9.6	6.7±4.0	0.24
Pressure flow studies*			
Qmax (ml/sec)*	12.3±4.9	18.5±3.4	0.009
PdetQmax (cmH20)*	31.6±17.8	21.9±11.3	0.23

*Mean±SD, **Mann-Whitney U-Wiconxon rank-sum test; Qmas: Maximum urine flow rate, PVR: post void residual, PdetQmax: detrusor pressure at maximum flow

Interpretation of results

Frequency was the chief complaint of renal transplant recipients with LUTS, as previously described by van der Weide et al (1). Voiding symptom scores of IPSS values was significantly higher in the male group, which might relate to the high bladder outlet obstruction incidence in aging man. (Table 1) Maximal uroflow (female=15.6 ml/sec vs male = 11.4 ml/sec, P=0.007) and residual urine volume (male = 69 ml vs female = 42 ml, P=0.04) differed significantly between men and women. (Table 2) The urodynamic parameters were compared between those who had IPSS values > 7 and those who had IPSS values ≦7. For male patient whose IPSS values≦7, maximal uroflow was significantly lower; whereas voiding volume, the first sensation of bladder capacity, and maximal bladder capacity were significantly higher. (Table 3) However, none of the comparative urodynamic parameters differed significantly between women with an IPSS > 7 and those with an IPSS ≦7. (Table 4)

Concluding message

Although renal transplant recipients with LUTS have decreased bladder capacity and compromised bladder compliance, most of them still have acceptable uroflow and minimal residual urine. IPSS is not a good tool for defining the severity of bladder function in female renal transplant recipients with LUTS; however, IPSS values can apply as pre-test screen of urodynamics to define the etiology of bladder dysfunction in male transplant recipients with LUTS.

References

1. Lower urinary tract symptoms after renal transplantation: are there changes over time? ; Urology. 2004 Mar;63(3):442-6.

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