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EVALUATION OF THE LOWER URINARY TRACT IN PATIENTS WITH END STAGE RENAL DISEASE

SON DÖNEM BÖBREK HASTALIKLARINDA ALT ÜRİNER SİSTEMİN DEĞERLENDİRİLMESİ

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ÖZET

Son dönem Böbrek hastalığı olan 138 hastada, alt üriner sistem radyolojik, ürodinamik çalışmalar ve seçilmiş olgularda sistoskopi ile değerlendirildi. Transplantasyondan önce ve 3 ila 6 ay sonra ürodinamik çalışmalar yapıldı.

59 (% 42.8) hastada, 69 alt üriner sistem anomalisi saptandı. Oligaanürik hastalarda düşük komplians , instabil mesane ve obsrükte olmayan azalmış idrar akımı gibi anormal ürodinamik bulguların oranı, oligoanürik olmayan hastalara göre anlamlı deerecede yüksekti. Transplantasyon sonrası idrar miktarının artımıyla 1 "ı dışındaki tüm olgularda bu anormal bulguların kaybolduğu izlendi.

Sonuç olarak, son dönem böbrek hastalmarında alt üriner sistemin değerlendirilmesinde serbest uroflowmetrui ve miksiyon sistoüretrografisinin iilk yapılacak işlem olduğu, sistometrik ve endoskopik değerlendirmenin seçilmiş olgularda yapılması gerektiği kanısındayız.

Anahtar Kelimeler : Son dönem böbrek yetmezliği, Ürodinamikler, Alt üriner trakt.

SUMMARY

Lower urinary tract of 138 patients with end stage renal disease were evaluated by means of radiologic and urodynamic studies in all and endoscopic studies in selected cases.Urodynamic studies were performed before and 3 to 6 months after renal transplantation.

In 59 (42.8%) patients, 69 lower urinary tract abnormalities were found.The rates of abnormal urodynamic findings including unstable bladder, bladder hypocompliance and unobstructed low flow pattern were significantly higher in oligoanuric patients than the nonoligouric patients.

Along with an increase in urine output after renal transplantation, these abnormal findings disappeared in all patients except one.

To identify lower urinary tract abnormalities in patients with end stage renal disease, we suggest the routine use of free uroflowmetry and voiding cystourethrography as first step studies.Cystometric and endoscopic evaluations have limited indications in selected cases.

Key words: End stage renal disease, urodynamics, lower urinary tract

Introduction

Renal transplantation is the gold standart for the treatment of end stage renal disease. Disorders of the lower urinary tract especially the bladder dysfunction may have deleterious effects on the outcome of renal transplantation (1,2,3).

During the post-transplant period, sterility of urine is one of the important factors in establishing urinary continance and a normal bladder compliance. Another factor is the management of anatomic and functional defects of the lower urinary tract which are masked in oligoanuric patients even they do not present releated symptoms. Besides that spontaneous reversal of pretransplant urodynamic abnormalities following a normal urine output after renal transplantation has arisen contradictory commands (1,2).

In this study, we tried to standardize the diagnostic tools to evaluate the lower urinary tract abnormalities and to discuss the management of these lesions in patients with end stage renal disease.

Materials and Methods

Table 1. Lower urinary tract abnormalities sees İn our series

Abnormalities	n
Low urine flow rate	17
Benign prostatic hyperplasia	4
Mcatal stenosis	1
Unknown origin	12
Unstable bladder	11
Bladder hypocompliance	20
Large bladder capacity	8
Congenital bladder diverticula	1
Bladder tumor	1
Vesicoureteral reflux	11
Unilateral	1
Bilateral	6

The study includedl38 patients (97 males and 41 females) aged between 16 to 58 years of whom 40 were in oligoanuric state. In addition to biochemical and haemathologic tests, urine culture, renal ultrasound, voiding cystourethrography (VCUG), free uroflowmetry, cystometry and sphincter EMG studies were done in all patients. Pressure-flow studies and urethrocystoscopy were performed in selected cases. All studies were done when the patient's urine was sterile. For cystometric studies, serum physiologic in room temperature was infused at the rate of 50 ml./min.

After 3 to 6 months of transplantation, urodynamic studies were repeated.

Results were evaluated by using Wilcoxon signed-ranks test and t test for proportional data. Statistical significance was assumed for $p<0.05$.

Results

In 59 (42.8%) patients, 69 lower urinary tract abnormalities were found (Tablel). Urodynamic studies revealed 56 abnormal findings in 48 (34.8%) patients.

Free uroflowmetry revealed low flow rates in 17 of patients. In oneout of 4 patients with benign prostatic hyperplasia, transuretral resection of the prostate was done 3 weeks after renal transplantation. In the remaining 3 patients therapy was not indicated. Simultaneous meatotomy was planned in one patient with meatal stenosis of the urethra but he died before renal transplantation. Endoscopy, cystometry with pressure-flow study and VCUG did not reveal releated abnormalities in 12 of 17 patients with low flow rates. Of these patients 9 underwent renal transplantation and they all achieved normal maximum flow rates in the post-transplant period (Table II).

Fourteen of 20 patients with bladder hypocompliance and 8 of 11 patients with unstable bladder underwent renal transplantation, and none of them received medical therapy before and after the procedure. In the post-transplant period, daily urine output of these patients raised more than 1500 ml and studies revealed normal bladder compliance and an increase in cystometric bladder capacity in all. Unstable detrusor contractions disappeared in 7 patients and remained unchanged in one patient but he did not develop related symptoms.

In eight patients with large bladder capacity, free flow rates were normal and none had residual urine. They all maintained frequent voiding schedules after renal transplantation and none of them developed clinical symptoms and post-operative studies revealed the same findings II).

Table 2. Comparison of urodynamik findings before and after renal transplantation (All values were presented as mean SD)

Urodynamic findings	n	Before transplantation	After transplantation	Significance
Low urine flow rate with unknown origin Qmax (ml/sec)	9	12.6±3.1	29.3 ±5.7	p<0.05
Unstable bladder Capacity (ml)	8	275.3 ± 92.5	406.2 ±49.5	p<0.05
Bladder hypocompliance	14			
Capacity (ml)		260 ± 84.9	409 ± 58.3	p<0.05
Compliance (ml/cm H20)		6.1 ± 2.6	28.8±11.1	p<0.01
Large bladder capacity	8			
Capacity (ml)		827.5 ± 62.2	817.5 ± 59.3	p>0.05
Qmax (ml/sec)		8.2 ±2.1	19.3 ±1.8	p>0.05

The rate of urodynamic abnormalities before renal transplantation was significantly higher in oligoanuric patients (Table III).

Table 3. The rates of urodynamic abnormalities in oligoanuric and non-oligoanuric patients

	Oligoanuric pts(n:4)n %		non-oligoanuric pts (n:98) n %		Significance
Bladder hypocnmpliancf	17	42.5	3	8	p<0.001
Unstable bladder	8	20	3	3	p<0.02
Low urine flow	8	20	4	4	p<0.05

Discussion

Conservative management of patients with chronic renal failure is usually done by nephrologists before and after renal transplantation. In some patients treatment of urinary stones,tumors and vesicoureteral reflux may provide a sufficient renal reserve and prevent renal transplantation.

In addition, anatomic and functional abnormalities of the lower urinary tract may have an impact on the outcome of renal transplantation. Hence urologists should play an important role in the management of such pathologic conditions.

Identification of the lower urinary tract disorders is not as easy as upper tract abnormalities in patients with chronic renal failure. Especially masking of symptoms related to bladder outlet obstructions and tumors in oligoanuric patients may cause an underestimation in diagnosis. It is reported that urodynamic and endoscopic studies should routinely be performed to rule out such abnormalities (1).

Vesicoureteral reflux is one of the important causes that leads to chronic renal failure and can usually be revealed by using VCUG. Besides that VCUG may also demonstrate intraluminal filling defects and bladder outlet obstruction, and in suspected cases definitive diagnosis can be made by endoscopic and urodynamic studies (4,5). Steers et al. reported that endoscopy was not routinely indicated in patients with normal VCUG (2). In our study cystoscopy was performed in selected cases and only in one patient VCUG demonsrated a filling defect and cystoscopy revealed the bladder tumor afterwards.

Uroflowmetry is not a reliable study to differentiate bladder outlet obstruction from impaired detrusor contractility if it is not performed in combination with pressure-flow studies and VCUG (6). Besides that low flow rates in patients with chronic renal failure do not necessarily mean that they have bladder outlet obstruction or impaired detrusor contractility. In our study, only 5 out of 17 patients with low flow rates were found to have infravesical obstruction. Radiographic, cystometric and endoscopic findings did not show obstruction and/or impaired detrusor contractility in the remaining 12 patients. Post-transplant urine flow rates of these 12 patients increased significantly. It was interesting to note that most of them were in the oligoanuric state before renal transplantation.

It has been reported that nonobstructive urine flow rate increased significantly without a change in voided volumes after renal transplantation. It was suggested that this phenomenon resulted from an improvement in detrusor contractility with re-establisment of normal urine output after transplantation (2).

We noted that daily urine output was low in most patients with decreased bladder capacity and/or decreased compliance and also in patients with unstable bladder. Following renal transplantation with re-establishment of normal urine output these findings disappeared in all patients except in one with unstable bladder.In dogs with urinary diversion it was demonstrated that bladder capacities and compliance decreased but returned to normal within 6 weeks after urinary undiversion (2). In another study, uremic nephropaty was thought to be the cause of urodynamic changes (7). Shenasky proposed hydrodistension before renal transplantation (5) but others reported that spontaneous reversal of urodynamic changes would occur after transplantation (1,2) as we also noted in our patients.

Steers et al. reported that 33 % of insulin-dependent diabetic transplant candidates had large capacity bladders but none of them developed urinary problems within the post-transplant period (2). In our study none of the nondiabetic patients with large-capacity bladders had residual urine and also none developed post-transplant urinary problems despite no change was observed in bladder capacity.

There are different points of view on the treatment of benign prostatic hyperplasia in patients with chronic renal failure. Some advocate transurethral resection of the prostate to be done 6 to 8 weeks before renal transplantation in order to prevent the potential risks including residual urine, urinary infection and retention while the patient is taking immunosupression after renal transplantation (1,5,8). On the other hand, pointing to the complications of transurethral resection of the prostate including bladder neck contracture or urethral scarring in patients with decreased urine output (in oligoanuric state) (5,9). Reinberg et al. reported that resection could be performed with minimal morbidity after renal transplantation (3).

In conclusion we observed that the rate of urodynamic abnormalities was higher in oligoanuric patients than the patiens with modest urine output and with re-establishment of normal urine output after renal transplantation these abnormal findings disappeared.As for urologic evaluation of lower urinary tract in patients with end stage renal disease, we suggest that cystometric and endoscopic studies may be performed in selected cases but free uroflowmetry and VCUG should routinely be used.

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