

## ANURIC PATIENTS BEFORE RENAL TRANSPLANTATION HAVE TROUBLE WITH LOWER URINARY TRACT SYMPTOMS POSTOPERATIVELY

### Hypothesis / aims of study

In our country, renal transplantation is not common compared with hemodialysis (HD) because of the donor shortage. Therefore, we often treat renal transplanted patients after long-term HD. One of many complications related to long-term HD is disuse atrophy of the bladder. The storage and voiding symptoms after transplantation may be caused by a small bladder capacity and bladder smooth muscle atrophy. The present study tried to determine whether the incidence of lower urinary tract symptoms (LUTS) and decreased quality of life (QOL) after transplantation influence by urine production before transplantation. Thus, we investigated LUTS, QOL and objective findings related to lower urinary tract function postoperatively in both anuric and non-anuric patients before transplantation.

### Study design, materials and methods

Data were prospectively collected from patients who underwent renal transplantation at our hospital between 1999 and 2010. Patients were divided into anuric group and non-anuric group by the urine production before transplantation. In regard to the incidence and severity of LUTS, and impact on QOL, we used International Prostate Symptoms Score (IPSS), Overactive Bladder Symptoms Score (OABSS) and King's Health Questionnaire (KHQ). Lower urinary tract function was examined by uroflowmetry, post-void residual urine volume and 24-hour frequency volume chart. More than a year after transplantation, patients were evaluated by these questionnaires and objective findings.

### Results

Twenty eight patients were included in this study (Table 1). Voided volume, maximum flow rate, post-void residual urine volume and 24-hour frequency were not significantly different between anuric and non-anuric groups (Table 1). Voiding, storage and total symptom score and QOL score of IPSS were significantly higher in anuric group compared to non-anuric group (Table 2). Urgency score of OABSS was also significantly high in anuric group (Table 2). According to the KHQ, anuric patients suffered from physical limitations and personal relationship due to LUTS after transplantation (Table 2).

### Interpretation of results

More than a year after transplantation, bladder function except for 24-hour frequency was normal in anuric patients as well as non-anuric patients. Increased frequency is thought to be caused by polyuria. Our findings indicate that disuse bladder due to long-term HD usually recover. On the other hand, LUTS continued and QOL became impaired in anuric patients for over a year. One possible explanation is that the duration of HD is long in anuric patients. Pathophysiology related to long-term HD such as malnutrition, inflammation and atherosclerosis increases oxidative stress. Increased oxidative stress damages nerve, epithelium and smooth muscle of the bladder, thereby producing storage and voiding symptoms.

### Concluding message

Anuric patients before transplantation complain of LUTS for more than a year postoperatively. We should pay attention in this state and study treatment strategy.

Table 1 :

	Anuria Group	Non-anuria Group	p Value
No. cases	11	17	
Median pt. age (range)	49.5 ± 9.3	39.8 ± 14.9	Not significant
No. males (%)	9 (82%)	13 (76%)	Not significant
No. females (%)	2 (18%)	4 (24%)	Not significant
Duration of dialysis	170.0 ± 85.5	35.0 ± 41.2	<0.001
No. Diabetes Mellitus (%)	1 (9%)	1 (6%)	Not significant
No. Hypertension (%)	6 (55%)	13 (76%)	Not significant
No. Cerebrovascular disease (%)	1 (9%)	2 (12%)	Not significant
No. Dysuria treatment (%)	1 (9%)	1 (6%)	Not significant
<b>Uroflowmetry</b>			
Voided volume (ml)	207 ± 123	240 ± 116	0.49
Maximum flow rates (ml/s)	22.7 ± 13.8	21.5 ± 8.8	0.46
Post-void residual urine (ml)	15.7 ± 19.8	17.8 ± 18.9	0.75
<b>Frequency volume chart</b>			
No. voids / 24h	11.2 ± 4.3	11.3 ± 3.8	0.91
Voided volume / 24h	2413 ± 737	3055 ± 2083	0.06

Table 2 :

	Anuria Group	Non-anuria Group	p Value
<b>IPSS</b>			
IPSS-voiding symptom	2.4 ± 2.4	0.7 ± 1.0	<b>0.015</b>
IPSS-storage symptom	3.9 ± 2.5	1.8 ± 1.5	<b>0.011</b>
IPSS-total	6.3 ± 3.8	2.6 ± 1.7	<b>&lt;0.001</b>
QOL score	2.6 ± 1.5	1.1 ± 1.1	<b>0.011</b>
<b>OABSS</b>			
Urgency score (OABSS)	1.2 ± 2.2	0.3 ± 0.7	<b>0.013</b>
No. voids / night (OABSS)	1.3 ± 1.0	0.8 ± 0.6	0.171
OABSS-total	3.6 ± 2.5	1.7 ± 1.0	<b>0.014</b>
<b>KHQ</b>			
General health perception	31.8 ± 11.6	30.8 ± 18.8	0.958
Incontinence impact	15.1 ± 17.4	11.7 ± 23.3	0.373
Role limitations	9.0 ± 17.2	4.9 ± 14.1	0.341
Physical limitations	15.1 ± 15.7	4.9 ± 11.4	<b>0.048</b>
Social limitations	9.0 ± 21.5	0.6 ± 2.6	0.273
Personal relationship	9.0 ± 13.6	0 ± 0	<b>0.008</b>
Emotions	13.1 ± 23.7	1.3 ± 3.6	0.076
Sleep and energy	13.6 ± 20.8	4.9 ± 9.7	0.198
Symptom severity	18.1 ± 12.3	14.5 ± 7.1	0.457

#### References

1. van der Weide, M.J., et al., Lower urinary tract symptoms after renal transplantation. J Urol, 2001. 166(4): p. 1237-41.

#### Disclosures

**Funding:** none **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** we used questionnaire and non-invasive testing with the consent of the patient. **Helsinki:** Yes **Informed Consent:** Yes