

Title (type in CAPITAL LETTERS, leave one blank line before the text) PROBLEMS WITH BLADDER STORAGE AND EMPTYING AFTER KIDNEY TRANSPLANTATION

### Aims of Study

Kidney transplant is a treatment option in end-stage renal failure (Morris, 1994) Unfortunately, the demand for donor kidneys outnumbers the offer In the Netherlands the average waiting list comprises 2 to 3 years For this reason, most of these patients are on some kind of kidney replacement therapy (e.g. hemodialysis, peritoneal dialysis) In most of the patients with end-stage renal failure the urine production is minimal, but in some it can be normal. Therefore, most of these patients have a non-functional bladder for a certain period of time until urine production is restored after a successful renal transplant It is hypothesised that this non-functioning of the bladder prior to transplantation might hamper post-operative bladder function The aim of this study is to determine whether and to what extent problems with bladder storage and emptying occur after kidney transplantation and to investigate which patient related characteristics might influence post-operative bladder (dys)function

### Methods

Information was gathered about the lower urinary tract function of all patients who had a kidney transplantation in 1998 (group A) and of a control group of patients who visited an outpatient clinic for non-urolological problems (group B) Therefore, all patients and controls had to fill in a questionnaire based on the International Continence Society Male Questionnaire (Donovan, Abrams et al 1996) and the Bristol Female Lower Urinary Tract Symptoms (BFLUTS) questionnaire (Jackson, Donovan et al 1996) From their medical records information about patient related factors (e.g. type of renal failure, type of renal replacement treatment before transplantation, duration of renal replacement treatment, first or second transplantation, diuresis before transplantation) was noted (table 1) Quota sampling was used to ensure that the control group and the transplantation group did not differ with regard to age and gender To test for significance of the differences between the two groups, Mann-Whitney U tests were used

### Results

Important differences with regard to bladder storage function between the transplantation and the control group were found Both day-time and night-time micturition frequency ( $\geq 7$  micturitions/day) was significantly higher in group A ( $p < 0.002$  and  $p < 0.0001$  respectively) This difference in frequency of micturition was not related to any of the pre-operative patients' characteristics Even whether or not there was normal diuresis prior to transplantation did not influence post-operative bladder function! With regard to bladder emptying function no differences between the two groups were found

### Conclusion

After kidney transplantation the storage function of the bladder is disturbed 49 percent of patients after transplantation suffer from day and night-time frequency This finding is irrespective of pre-transplant diuresis The findings suggest that it might be worthwhile to assess of bladder storage and emptying function after kidney transplantation, and, if necessary, to offer a bladder training program to the patient

### References

- Donovan, J., Abrams, P., Peters, T.J., Kay, H.E., Reynards, J., Chapple, C., De La Rosette, J.J.M.C.H., Kondo, A., 1996. The ICS-BPH study: the psychometric validity and reliability of the ICSmale questionnaire. *British Journal of Urology*, 77, p. 554-562
- Jackson, S., Donovan, J., Brookes, S., Eckford, L., Swithinbank, L., Abrams, P., 1996. The Bristol Female Urinary Tract Symptoms questionnaire: development and psychometric testing. *British Journal of Urology*, 77, p. 805-812
- Morris, P.J. 1994. *Kidney Transplantation: principles and practice*. W.B. Saunders Company, Philadelphia

Transplantation patients	Frequency	Percent
<i>Type of renal failure N=63</i>		
Chron Glomerulonefritis	19	30.2
Diabetes mellitus	2	3.2
Cong. Cystiteren	8	12.7
Chron Pyelonefritis	6	9.5
Other	12	19.0
Unknow	16	25.4
<i>Type of renal replacement treatment N=62</i>		
No treatment	6	9.7
Peritoneal dialyse	22	35.5
Both peritoneal as hemodialyse	12	19.4
Hemodialyse	22	35.5
<i>Duration of replacement treatment in months N=62</i>		
0	6	9.7
1-18	17	27.4
19-36	22	35.5
37 or more	17	27.4
<i>Diuresis before transplantation N=59</i>		
Nihil	17	28.8
1-499	12	20.3
500-999	11	18.6
1000 or more	19	32.2
<i>First or second transplantation N=63</i>		
First kidney	51	81
Second kidney	12	19

Table 2 Storage function of the bladder transplantation group versus control group

Name of variable	Transplantation group	Control group
Valid cases, N	63	74
Mean age	47	44
Man	34 (54%)	37 (50%)
Female	29 (46%)	37 (50%)
Mean frequency of micturition at day-time		
1-4	13 (21%)	34 (47%)
5-6	18 (30%)	22 (30%)
7-8	24 (39%)	10 (14%)
9 or more	6 (10%)	7 (9%)
Frequency of micturition per hour		
Once in 4 hours	13 (22%)	28 (38%)
Once in 3 hours	24 (40%)	30 (41%)
Once in 2 hours	20 (33%)	12 (16%)
Once an hour	3 (5%)	4 (5%)
Frequency of micturition at night		
0	6 (9%)	35 (47%)
1	18 (29%)	25 (34%)
2	26 (41%)	10 (14%)
3 or more	13 (21%)	4 (5%)