

THE EVACUATION OF THE BLADDER AFTER RENAL TRANSPLANTATION

Hypothesis / aims of study: After renal transplantation (Tx) it is important that the bladder functions normally, because bladder dysfunction may harm the transplanted kidney^{1,2}. Recovery of the bladder's reservoir function after renal transplantation has gained some attention^{3,4}. These studies demonstrate that after Tx bladders can recover and regain normal capacity. On the other hand it is reported that renal transplant patients suffer from frequency, nocturia and decreased bladder sensitivity^{5,6}. Much less is known on the bladder's evacuation function after renal transplantation. To gain more insight in the bladder's evacuation function we studied 52 renal transplant patients. We aim to answer the following question: What is the prevalence and nature of dysfunction of the bladder's evacuation function after renal Tx?

Study design, materials and methods: In this explorative study, data were gathered from January to December 2004, using a written questionnaire⁷, frequency volume charts, free uroflowmetry and transabdominal ultrasonography, and medical records. We determined the symptoms hesitancy, straining, intermittency, sensation of incomplete emptying and burning feeling⁸ using a questionnaire and urine flow and post void residual using free uroflowmetry and transabdominal ultrasonography. The research group consisted of 52 patients, 35 males and 17 females, mean age 47 (range 20 - 74), who underwent renal transplantation between July 2003 and August 2004 at one University Medical Centre. The mean interval between Tx and data collection was 5 months (range 3 to 9 months).

Results: Our findings show that 24 (46%) patients suffer from hesitancy, 26 (50%) from straining, 13 (25%) from intermittency, 12 (23%) from sensation of incomplete emptying and 12 (23%) from burning feeling after micturition. Residual urine after micturition varied from 0 ml to 532 ml with a mean of 29 ml. Out of 52 patients 6 (6%) had residual urine of 100ml or more and 13 (25%) had an intermittent flow. Apart from the number of symptoms (maximum number of symptoms 6), also the distribution over the patients is important. Out of 52 patients 15 (29%) did not have any symptoms, 18 (35%) had one or two symptoms, 14 (27%) had three or four symptoms and 5 (9%) had five or six symptoms of dysfunction of the bladder's evacuation function. On average patients had two symptoms. Furthermore, our findings show that maximum voided volumes⁸ determined from the frequency/volume charts varied from 90 to 920 ml with a mean of 468 ml. Out of 52 patients 7 (13%) had a maximum voided volume less than 325 ml and 14 (27%) had a maximum voided volume of more than 500 ml. The mean nocturnal urine production was 37% of total urine production in 24 hours (range 14% to 66%).

Interpretation of results: The results obtained from our study show that symptoms of dysfunction of the bladder's evacuation function are very common in renal transplant patients. In 7 (13%) patients the maximum voided volume remained relatively small, in 14 (29%) it was relatively high. The high amount of urine produced during the night resulted in a prevalence of nocturnal polyuria⁸ in 33 (63%) patients.

Concluding message: After Tx, renal transplant patients show a high incidence of symptoms of dysfunction of the evacuation function of the bladder. For those with an impaired evacuation function we recommend micturition training after renal transplantation.

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