

DIETARY COUNSELING FOCUSED ON SODIUM RESTRICTION REDUCES NOCTURNAL URINE VOLUME AND NOCTURNAL POLYURIA INDEX IN RENAL ALLOGRAFT RECIPIENTS WITH NOCTURNAL POLYURIA

Hypothesis / aims of study

Nocturia is common in patients with renal transplantation (RTx), basically due to nocturnal polyuria (NP).¹ The cause of NP in patients with RTx (or not) is multifactorial, but sodium retention during daytime is considered as one of the significant factors from observational studies.² Here, we performed an interventional study of dietary counseling for recipients to investigate whether sodium restriction alters nocturnal urine volume (NUV).

Study design, materials and methods

This study was conducted as part of a prospective, single center, single-arm study to evaluate the efficacy of dietary counseling in 38 patients with RTx, with median age of 45.5 years old (male: female, 23: 15), post-transplant duration for 9 years and BMI of 22.7 kg/m². Blood tests, 24-hr urine collection, frequency volume chart (FVC) and body fluid composition were evaluated before and after three sessions of dietary counseling by a board-certified dietitian during two months. Sodium intake was estimated based on 24-hr urinary sodium excretion. NP was defined here as more than 10ml/kg of urine volume between 10 p.m. and 6 a.m.

Results

Twenty three recipients (60.5%) had nocturnal polyuria (NP). Recipients with NP had higher urine volume per day, and lower urinary creatinine and electrolytes concentration than those without NP. After the course of dietary counseling, recipients with NP reduced sodium intake per day from 9.9g to 7.3g in average ($p < 0.01$), decreased NUV from 862ml to 709ml ($p < 0.05$) and decreased nocturnal polyuria index (NPI) from 0.39 to 0.33 ($p < 0.05$), while total urine volume per day was not significantly changed (before/after, 2229ml/2142ml). Eleven of 23 recipients with NP (47.8%) were altered to be non-NP. Recipients with non-NP did not reduce NUV or NPI (406ml/487ml, 0.26/0.30, respectively). Reduction of sodium intake and decrease of NUV were significantly correlated (Spearman's rho=0.45, $p=0.005$).

Interpretation of results

Surplus intake of sodium can be a cause of NP in renal allograft recipients.

Concluding message

Dietary counseling focused on sodium intake could reduce NP and NPI in renal allograft recipients with NP. Though recipients are in specific conditions such as taking medicine for immunosuppressants and having a denervated kidney, it is tempting to say that the result obtained here can be applied to general populations suffering from NP. Further prospective studies of dietary counseling with sodium restriction for general patients with NP are warranted.

References

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2. Alstrup K, Graugaard-Jensen C, Rittig S, Jorgensen KA : Abnormal diurnal rhythm of urine output following renal transplantation: the impact of blood pressure and diuretics. *Transplant Proc* 2010 ; 42 : 3529-3536.

Disclosures

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