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Early-morning urine osmolality in patients with chronic allograft nephropathy

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Dear Editors:

It is well known that the concentrating ability of the kidney transplant is decreased [1, 2, 3]. We tried to determine whether or not any relationship between concentrating ability and tubulo-interstitial histological findings could be demonstrated in transplant recipients. Interstitial and tubular histological changes are considered to be prominent features of chronic allograft nephropathy [4].

Early-morning urine osmolality (U_{OSM}) was examined in 104 transplant recipients (aged 21-76 years) undergoing renal transplant biopsy. Renal grafts were obtained from cadaveric donors. It was 33 ± 10 months since the patients had undergone their first transplantation. At the time of examination, S_{cr} was 201.5 ± 100.1 μmol/l, and overnight water restriction lasted 8.58 ± 1.07 h; graft biopsy was performed the day after U_{OSM} examination. Patients with acute rejection were excluded from the study. All patients received triple immunosuppressive therapy, which included cyclosporin A, steroids, azathioprine or mycophenolate mofetil.

Patients were entered into the study, which was approved by the local ethics committee. Biopsy findings were classified according to the Banff score system. Interstitial changes (0–3) and tubular changes (0–3) were added and expressed as tubulo-interstitial changes (0–6). To evaluate the results, we used receiver-operating characteristic (ROC) analysis. The cut-off value of tubulo-interstitial changes was 2, and that of Banff chronic allograft nephropathy (CAN), grade I.

The mean U_{OSM} of patients was 384 (± 120) mosmol/kg H_2O. The results of ROC analysis are shown in Table 1. It is evident from the table that the AUC (area under the ROC curve), as well as the specificity of U_{OSM}, are very low. The sensitivity of U_{OSM} is at the limit of significance ($P < 0.05$). The best-fit value (best

Table 1 ROC analysis of early-morning U_{OSM} in renal transplant recipients. Cut-off value of tubulo-interstitial changes (0–6) is 2, and that of Banff CAN (0-III) is I

Parameter	U_{OSM} (mosmol/kg H_2O)	
ROC analysis	Tubulo-interstitial changes	Banff CAN grade
AUC (SEM)	0.527 (0.072)	0.541 (0.074)
Sensitivity	82.6	85.0
Specificity	38.9	38.6
Best-fit value	442	442

combination of sensitivity and specificity) suggests slightly hypertonic urine.

Our results suggest that there is no significant correlation between concentrating function and tubulointerstitial histology findings.

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