
FATAL KIDNEY TRANSPLANT

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A young man of 19 years came with fever and dysuria. Nuclear medicine renal scan (Tc DTPA) showed normal study, but hippuran renogram depicted bilateral renal parenchymal insufficiency. Renal biopsy showed end-stage renal disease. Maintenance hemodialysis was started in 1995 in Dhaka and Rangpur. He had a live unrelated donor kidney transplant in 1997 in Bangalore, India. He used immunosuppressant drugs regularly e.g. steroid, cyclosporine etc. and started rapamycin in 2003 in England. He died on 25 Feb. 2005 at the Royal London Hospital due to (a) viral myocarditis, (b) severe chickenpox and (c) immunosuppression from renal transplantation.

Radiodinated hippuran. Tc-99m labelled dimercaptosuccinic acid (DMSA). Diethylene triamine pentaacetic acid (DTPA) and mercaptoacetyl triglycine (MAG3) are frequently used radiopharmaceuticals for the evaluation of individual renal function. Sherman and Blaufox (Nephron 1980; 25: 82-86) described reversal of absent renal uptake of ¹³¹I orthoiodohippuran in obstructive uropathy when obstruction was relieved. Of interest, Taylor et al. have described absence of ^{99m}Tc DMSA (dimercaptosuccinic acid) uptake in a patient with acute tubular necrosis from ischemia, but normal renal function returned after hemodialysis.¹ We reported earlier a case of reversal of DTPA uptake in a multicystic kidney after partial nephrectomy.² Quinn and Elder (JNM 1991; 32: 2273-2274) presented a patient with very poor uptake of ^{99m}Tc DTPA scan demonstrating only mild renal impairment. A three year old boy of Turkey suffering from growth retardation had Tc-99m DMSA and MAG3 scintigraphy to evaluate the renal function. The scintigraphy of Tc-99m MAG3 was totally normal but there were poor renal cortical uptake of Tc-99m DMSA. Interestingly there were also significant amount of activity in the urinary bladder in DMSA scintigraphy. The boy was having proteinuria.³

DMSA and glucoheptonate (glucose monocarboxylic acid or GHA) have significant binding in the renal cortex. About one half of the dose appears in the urine 2 hours after injection which is especially useful for delineating the collecting system. DTPA has its maximum concentration over the kidneys at 4 to 5 minutes. Body retention of DMSA is considerably longer than that of DTPA or GHA because of its strong binding to plasma proteins. Hippuran is extremely useful for functional and combined functional/imaging studies, however, short half-life of ¹²³I (only 13 hours), lengthy labeling time and the free iodide content (upto 5%) may be too high to estimate effective renal plasma flow (ERPF) accurately.

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