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## The utility of Nuclear Medicine in the renal transplant patient

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One of the great and most successful advances in medicine over the past 50 years has been the support and treatment of patients with renal failure. The use of dialysis and transplantation has changed the lives of countless millions across the globe. Nuclear medicine has been involved in this process though over the past 10 years there appears to have been a disengagement of nuclear medicine from the care of these patients. This is a disappointment given the range of studies that can be performed in these patients.

Patient do to arrive needing transplantation by magic they often have pre-existing conditions such as diabetes which means they are at risk of significant co-morbidities.

We know that dialysis does not provide a perfect metabolic replacement for the kidney. The patients on long term renal replacement have disturbed lipids, may have fluctuating blood pressure and also underlying risk factors which puts them at additional risk of atherosclerosis, which can be exacerbated by chronic hypercalcaemia.

Pre-transplantation cardiac assessment has been advocated by myocardial perfusion scintigraphy has been advocated as a way of screening for hidden ischaemia (1) though it may be less effective than first thought. Similar vascular disease may affect the brain leading to memory loss so patients just forget to have dialysis (2).

Once the patient has dialysis the main role of nuclear medicine has been directed towards assessing the renal transplant. Though many techniques have been evolved to perform such a study and quantify the blood flow to the kidney (3). Many centres have abandoned the use of nuclear medicine for this and relied on ultrasound assessment alone despite the fact there is no evidence that ultrasound techniques as accurate as nuclear medicine especially in early rejection. Nuclear medicine techniques are also involved in the identification of infarcted kidney (where the resistive index can be strangely normal) and leaks in particular small leaks as imaging can be done for up to 8 hours post injection of Tc-99m MAG3. The transplanted kidney lies at the end of a short ureter and reflux can lead to tissue loss this is best assessed using Tc-99m DMSA with SPECT being very useful (4). The situation may be made worse by immunosuppressive drugs which can affect the immune system enough to result in chronic sepsis and even tumour (post transplant lymphoproliferative disorder) Both Ga-67 and more recently F-18 FDG PET may have a role in diagnosis in these situation.

Nuclear medicine can remain in the forefront of the care of the renal transplant patient if we so wish.

### References

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