22–46) at the same period, his calcaemia was normal at 2.36 mmol/l and his phosphataemia was elevated at 1.89 mmol/l.

Concerning the post transplantation period, the time lag between renal transplantation and the occurrence of hypercalcaemia was extremely short, since hypercalcaemia appeared only 9 days after renal transplantation. He developed concomitantly marked hypophosphatemia with value reaching 0.41 mmol/l. While receiving the calcimimetic, his estimated calcium intake was in the range of 500 mg of calcium per day since he had been advised to stop all dairy products and to drink water with low calcium content. He neither received oral calcium nor vitamin D supplement, nor prescription of thiazide diuretic. The imunossupressive regimen associated corticosteroids, intravenous immunoglobulins, cyclosporine and mycophenolate mofetil during the first ten days post transplantation, then cyclosporine and mycophenolate mofetil alone. Drug-drug interaction between calcimimetic and the immunosuppressive agent is theoretically possible, since cinacalcet is primarily metabolized in the liver by the cytochrome P450 isoforms (CYP), CYP3A4 and CYP1A2 and since cyclosporine is also metabolized by CYP3A4 [4]. Nevertheless cinacalcet is not an inhibitor nor an inductor of CYP3A4. Thus a risk of drug-drug interaction between cinacalcet and cyclosporine is weak and has not been reported in clinical practice. Moreover no variation of cyclosporine level, monitored by measure of a single sample two hours post absorption cyclosporine (C2), has been noted concomitantly to the introduction or the increasing doses of cinacalcet.

As mentioned by Dr Drueke, Peacok and co-workers showed that cinacalcet in a twice daily dose is more efficient in decreasing serum PTH concentration than once daily but had no effect on serum calcium concentration in patients chronically treated by cinacalcet [5]. In our case, cinacalcet administration was scheduled once daily at the range of 30 mg, 60 mg and 90 mg then twice daily at the range of 120 mg per day with 60 mg in the morning and 60 mg in the evening.

Surgical exploration revealed four parathyroid glands. The weight of the right and left superior glands was respectively 84 and 133 mg and the weight of the right and left inferior glands respectively 543 mg and 100 mg. Surgical procedure was subtotal parathyroidectomy. Histologic data revealed four hyperplasic glands without adenoma or nodular aspect. Serum calcium level and PTH rapidly recovered normal range in the post operative period. After a transient hypocalcaemia at 2,07 mmol/l, calcaemia and phosphataemia were perfectly normalized 6 days later. Two months after parathyroidectomy, the PTH level was at 78 pg/ml with normal ionized calcium at 1.27 mmol/l (normal range, 1.14–1.31), normal phosphataemia at 1.27 mmol/l. Bone remodelling markers such as osteocalcin were in the normal range as 25-hydroxyvitamin D and 1,25-dihydroxyvitamin D serum circulating level. There was no alteration of renal function.

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Letters

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Renal vein thrombosis after renal transplantation – early diagnosis by duplex sonography prevented fatal outcome

Sir,

Complete renal vein thrombosis (RVT) after renal transplantation has an incidence of 0.55 to 3.4% [1–4] and accounts for up to one-third of early allograft losses [1,2]. In a large series, 73% were detected with a median delay of 8 days [2] suggesting that RVT develops gradually, presumably beginning as partial vein thrombosis. There may thus be a narrow but important window for early diagnosis of partial RVT, which would allow for timely intervention.

We report on a patient who had delayed graft function after cadaveric renal transplant. Duplex sonography showed very high peak velocity in the renal vein (260 cm/s) just prior to the anastomosis to the iliac vein suggesting a high grade stenosis. Intrarenal resistive index (RI) was normal (0.59) (Figure 1A). During the next 3 days repeated duplex showed a progressive increase in RI up to 0.89 (Figure 1B) and the appearance of a multiphasic flow signal in the hilar arteries (Figure 1C). Because of the high suspicion for a clinically relevant renal vein stenosis, the patient was taken to the operating room. The allograft was swollen and during palpation the enlarged and firm renal vein softened suggesting that some thrombotic material had been released. Intraoperative duplex demonstrated a residual intraluminal thrombus and a normalization of venous peak velocity. The arterial flow pattern had returned to a monophasic signal with an RI of 0.60 (Figure 1D). Renal vein stenosis had most likely been due to the renal vein being stretched and flattened at the point where it crossed the prominent external iliac artery. This had resulted in a low flow situation with subsequent thrombus formation. In order to avoid a similar compression of the renal vein, the allograft was repositioned under duplex sonographic guidance. Immediately after the operation, diuresis increased and serum creatinine fell to 94 μmol/l within 5 days.

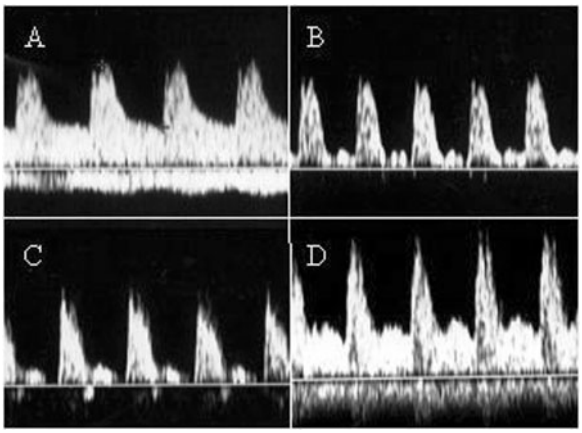

Fig. 1. Development of the arterial flow signal and intrarenal resistive index (RI). (**A**) Results obtained immediately after transplantation showing a monophasic flow signal with an RI of 0.59. (**B**) Results obtained on postoperative day two still showing a monophasic flow signal with an increased RI of 0.85. (**C**) Results obtained on postoperative day four illustrating the appearance of a multiphasic flow signal with an RI of 0.89. (**D**) Results obtained after successful operative revision again demonstrating a monophasic flow signal with an RI of 0.60.

While complete (i.e. complete RVT) or incomplete (i.e. venous stenosis) venous outflow obstruction is usually not difficult to diagnose by duplex sonography, the clinical relevance of the latter is not clear. Some investigators have reported that renal vein stenosis can cause major clinical problems [5,6]. However, in our experience many patients with a high grade venous stenosis have good allograft function. In our patient, it was only the progressive increase in RI and a change from a monophasic to a multiphasic arterial flow signal that suggested relevant venous obstruction and allowed for timely intervention preventing likely loss of the allograft due to complete RVT. It appears thus that changes in the arterial flow signal and RI are crucial to distinguish relevant renal vein stenosis from increased venous peak velocity without clinical significance. Repeated duplex sonography may therefore be a valuable tool to monitor patients at risk for RVT in the first 2 weeks post-transplant, particularly in the presence of delayed graft function.

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First evidence of fatal hantavirus nephropathy in India, mimicking leptospirosis

Sir,

In a recent Indian serosurvey [1], it was announced that 'no reports of hantavirus infections in humans from India existed [before 2005]'. We wish to point out that serological and clinical evidence of hantavirus infection in India was already well documented before 2005.

From 1998 on, we screened leptospirosis-suspected cases in India for the only known cosmopolitan hantavirus serotype, Seoul virus (SEOV). Wild rats are the reservoir of SEOV and these commensal rodents have a documented presence worldwide [2], including India. SEOV can cause thrombocytopenia with concomitant kidney and liver involvement, thus, mimicking leptospirosis [2]. In addition to murine SEOV, we have a policy to use also an arvicoline screening antigen, i.e. from Puumala virus (PUUV). PUUV is spread in Europe and Russia by bank voles, causing a milder form of nephropathy with thrombocytopenia, called 'nephropathia epidemica' (NE). This simple dual approach of screening leptospirosis-suspected sera enabled us to document in 1992 the first serologically confirmed hantavirus cases in the New World (Recife, Brazil) [3], as well as in the Netherlands [4] and in Northern Ireland [5].

In short, we detected hantavirus-specific immunoglobulin (Ig) G and IgM antibodies by strip immunoblot assay (SIA) layered with SEOV and PUUV recombinant nucleoproteins (rNP) (courtesy of Brian Hjelle, University of New Mexico) and by PUUV rNP enzyme-linked immunosorbent assay (ELISA). All studied sera had to be seronegative for leptospirosis in micro-aggluntination test (MAT) testing in India, and negative again in our hands with a specific and probably more sensitive Patoc–IgG and –IgM ELISA test. Dengue infection was likewise serologically excluded by immunochromatography.

In a first 1998–1999 serosurvey, we found evidence of SEOV-like and/or PUVV-like antibodies [6]. Up to 2000, however, no clinically documented hantavirus cases had been reported from India. Therefore, we started a prospective study in the Chennai and Cochin area in southern India, investigating leptospirosis-suspected but MAT- and Patoc ELISA-negative cases. We detected 7/60 (12%) positives for SEOV in IgG SIA, i.e. showing a higher band intensity for SEOV than for PUUV, and 3/60 (5%) PUUV-positives. All IgG SIA-positives, except one SEOV + serum, were also IgM SIA-positive, thus, confirming for the first time recent hantavirus infections in at least nine Indian cases [7]. Two cases were fatal: one in Chennai and one in Cochin. Both patients had developed dialysis-requiring acute renal failure with severe hypoxia.