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BRIEF REPORT

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Orthostatic acute renal failure in a renal transplant

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Abstract Complications due to ureteric obstruction are an occasional cause for renal transplant dysfunction. Here we report an unusual case of orthostatic renal failure in a renal transplant recipient. Our patient had the previously reported predisposing risk factors including: female sex, obesity, and lax abdominal musculature. It is important to recognize this unusual complication of renal transplantation early in order to preserve long-term graft function.

Key words Orthostatic failure, kidney transplantation · Kidney transplantation, orthostatic failure

Introduction

Despite considerable improvements in the surgical techniques of renal transplantation, urological complications of the procedure develop in between 7% and 14% of patients [4, 5]. The most frequent of these complications is urinary obstruction due to problems with the ureteric bladder anastomosis. Urinary leakage and vesico-ureteral reflux may also develop. We recently observed an unusual case of a renal transplant with intermittent urinary obstruction, related to posture.

Case history

A 45-year-old obese black female with end-stage renal disease from polycystic kidney disease received a cadaveric renal transplant. She was treated initially with triple immunosuppression consisting of cyclosporin A, prednisone, and azathioprine. The transplant was placed in the R iliac fossa in an extraperitoneal position. The patient developed acute allograft rejection on day 14 that was resistant to three solumedrol pulses. She was subsequently treated with OKT3 with successful reversal of the acute rejection episode. Ten days later, she developed *Serratia* pyelonephritis, which was treated with intravenous antibiotics. During the subsequent weeks, the patient developed new onset diabetes mellitus secondary to steroids, the superficial aspect of the wound was slow to heal, and she developed a lymphocele that caused obstructive uropathy. The lymphocele was successfully drained with a drainage tube, and her serum creatinine returned to a baseline level of 1.5 mg/dl.

Six months later the patient presented to the clinic with complaints of a protrusion in the area of her renal transplant (Fig. 1) and almost no urine output during the daytime. She stated that she only made urine while supine in bed. Her serum creatinine had increased to 2.0 mg/dl. A renal ultrasound demonstrated hydronephrosis without evidence of a lymphocele. An isotope renal scan performed with the patient in the standing position revealed prompt initial perfusion of the graft but complete absence of excretion of tracer into the bladder during the initial 30 min while the patient was standing (Fig. 2a). Within 10 min of the patient being placed in the supine position, tracer began to appear in the bladder (Fig. 2b). Following the administration of furosemide there was rapid washout of tracer from the renal transplant. These findings were consistent with obstruction to renal transplant drainage when the patient was in the upright position. The patient was taken to the operating room and found to have a 12 × 8 cm incisional hernia. The hernia sac was removed and the defect repaired. Over the subsequent days the patient demonstrated good urine output in the supine and standing positions. A subsequent isotope renogram demonstrated prompt excretion of tracer into the bladder with the patient in the standing position (Fig. 2c). The graft has continued to function well for the last 12 months, and the patient's post-transplant diabetes has resolved with reduction in her dose of steroids.

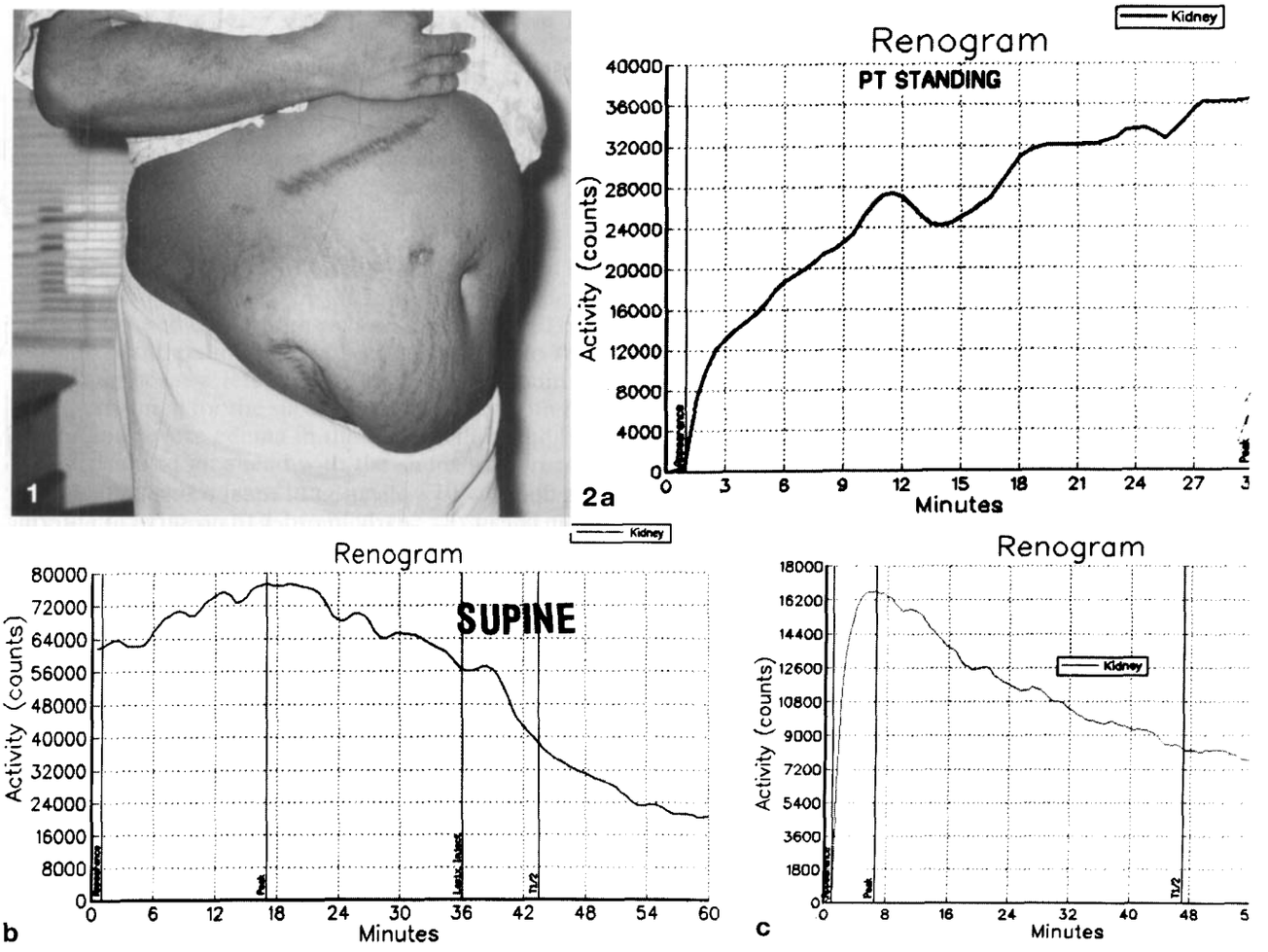

Fig. 1 The patient's renal transplant was clearly palpable as it protruded when the patient was in the standing position. When the patient was supine, the graft no longer protruded

Fig. 2 a–c Isotope renogram of the patient: **a** in the standing position. Tracer rapidly accumulated in the graft. After 30 min there was no excretion; **b** in the supine position. After 18 min, tracer began to be excreted; **c** 2 days following surgery in the standing position. There is rapid accumulation and excretion of tracer

Discussion

The movement of the kidney in response to a change in the posture of the patient has been termed nephroptosis. It is uncommon for nephroptosis to produce clinical manifestations, although symptomatic nephroptosis with intractible pain from hydronephrosis has been described and the symptoms have been reported to improve with nephropexy [2]. Being female, obese, and having lax abdominal walls have all been reported to be predisposing factors. All three factors were present in our patient. Our patient had been maintained on large volume peritoneal dialysis for some years prior to receiving her renal transplant and had frequently complained of lax abdominal muscles.

Nephroptosis has occasionally been reported previously in transplanted kidneys. Unlike the situation in native kidneys, it is rarely painful as the transplanted kidney is denervated. Marvin et al. have reported allograft torsion in a patient with prune belly syndrome in which the lax abdominal musculature resulted in the graft twisting on its pedicle [3] . More recently, Asim and Turney reported intermittent ureteric obstruction in an obese renal transplant patient that responded to ureteric stenting [1].

Nephrologists treating patients with graft dysfunction have many issues to consider, including allograft rejection, drug toxicity, and recurrent disease. It is important for them to remember that ureteric obstruction may be related to the patient's posture, particularly in obese patients or in patients with lax abdominal musculature.

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