Case Report

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Staghorn Renal Stone in a Transplanted Kidney

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Key Words

Renal transplantation
Staghorn calculus
Uric acid calculus

Abstract

Calculus formation in the renal transplanted patient is uncommon and usually represents a late complication of secondary hyperparathyroidism. A case report of a gouty patient with a transplanted cadaveric kidney is presented. The patient presented without hypercalcemia, or urinary infection, or renal tubular acidosis, or ureteral obstruction, or ingestion of antacids, or metabolic disease, or previous graft lithiasis. Five months after transplantation, a large stone within the renal pelvis was observed on an x-ray film. The radiotransparent nucleus, the patient's past history and the acute gouty arthritis he presented in the immediate postoperative period suggested that the nucleus of the calculus might be mainly composed of uric acid. These facts have drawn our attention to the control of the purine metabolism in the renal transplanted patients who have a past history consistent with gout.

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Calculus formation in the renal transplant patient is an uncommon phenomenon and usually represents a late complication of secondary hyperparathyroidism.

This case relates to a patient with a renal allograft who presented with a staghorn renal stone which had a radiolucent nucleus thought to be formed by uric acid.

Case Report

A 41-year-old man with end-stage renal failure secondary to chronic idiopathic glomerulonephritis started hemodialysis in February 1982. While he was on hemodialysis therapy, hypertension, uremic pericarditis and three episodes of acute gouty arthritis occurred. Two years later, a cadaveric kidney was transplanted to the patient's right pelvic area, which functioned immediately. Immunosuppressive therapy was started with corticosteroids and azathioprine, and 3 days postoperatively, he presented a mild rejection episode quickly reversed by low-dose corticosteroid therapy. His renal function remained normal after discharge. Forty days postoperatively, the patient had an episode of acute arthritis. Concomitant serum level of uric acid was 5.2 mg% whereas the urinary excretion of uric acid per 24 h was 1.189 mg. Urinalysis showed a pH of 5 together with 50 erythrocytes/high power field. Management included colchicine, sodium citrate and a low-protein diet. Eighty days postoperatively he presented with moderate dilatation of the intrarenal urinary system secondary to mild ureteral obstruction (a fluid collection) which was successfully treated with surgical drainage. An abdominal ultrasound examination showed a small calculus within the renal pelvis.

Five months after transplantation, a large stone within the renal pelvis was observed on a routine X-ray film of the abdomen (fig. 1). It had a central radiotransparent nucleus surrounded by a thin wall of calcified appearance. An eventual obstruction of the urinary tract was ruled out by echography. The patient had not presented with urinary infection or blood acidosis. The only treatment he had received was antacids for 8 days. Furthermore, serum and urine levels of calcium were always within the normal range.

An operative procedure was not carried out because of the lack of complications secondary to the renal stone.

Discussion

Lithiasis of the transplanted kidney occurs in approximately 1 % of all renal allografts [1, 2]. It tends to be a late complication occurring within 2 months to 7 years after transplantation [1–3].

The most common etiology appears to be hypercalcemia secondary to hyperparathyroidism; however, other causes, such as recurrent infec-

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Fig. 1. X-ray film of the abdomen showing a staghorn renal stone within the pelvis of the renal allograft.

tion, renal tubular acidosis, ureteral obstruction, ingestion of antacids, use of nonresolvable suture material, metabolic disease such as primary oxalosis, and donor graft lithiasis have been described [1–6].

Our patient did not have any of these predisposing conditions except for a mild obstruction of the ureter which was quickly and successfully relieved without sequelae. On the other hand, the patient's past history and the acute gouty arthritis he presented in the immediate postoperative period, together with the high urinary levels of uric acid, suggested to us that the radio-transparent nucleus of the calculus might be mainly composed of uric acid. Unfortunately, biochemical acid assessment was not possible because an operative procedure was not carried out.

Due to the absence of complications for renal calculus, a wait-and-see approach was decided on. If an eventual complication not involving the permeability of the urinary tract occurred in the future, the use of shock waves (ESWL) would be advisable for the destruction of the calculus. If the ureteral permeability was first involved or secondary to the ESWL treatment, the treatment of choice would be to place a nephrostomy catheter to solve the obstruction of the urinary tract, then try again with ESWL or to remove the calculus through this nephrostomy catheter. Only if all these attempts failed, we would consider the possibility of open surgery to remove the calculus.

We would like to point out the extreme rarity of the formation of a staghorn calculus in a renal allograft. Even more uncommon is the fact that the calculus probably is mainly composed of uric acid. These facts have drawn our attention to the necessity of monitoring pu-rine metabolism in those patients who have a past history consistent with gout.

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