CASE REPORT

Subcapsular Hematoma Causing Anuria After Renal Graft Trauma

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Abstract

A 67-year-old man presented to the emergency department 22 hours after a trauma to his kidney graft. He was asymptomatic during the first 10 hours, then he became anuric. His serum creatinine level was 2.73 mg/dL (baseline, 0.7 mg/dL), and his hemoglobin concentration was 13.1 g/dL. Computer tomography showed a 4-cm subcapsular hematoma without active bleeding. He underwent urgent decompression of the hematoma, and we did not find any active bleeding or parenchymal laceration. Urinary output had already recovered by the end of surgery without early or late complications. In conclusion, subcapsular hematoma, complicating a traumatic event on a kidney graft, can lead to a progressive parenchymal compression resulting in anuria. So, although in the absence of anemia, such events require urgent surgical decompression. Symptoms cannot be immediate, so all the graft trauma should be investigated with early ultrasound. Little is known in the case of major renal trauma but mildly symptomatic. Probably surgical exploration is better than observation to prevent possible early and late complications such as organ rejection or a Page kidney.

Key words: *Bleeding, Kidney transplant, Surgery*

Introduction

Renal transplant is the preferred treatment for end-stage renal disease. Because of its low abdominal location, renal allografts lose the structural support offered to the native kidney by the thoracic wall and paraspinal musculature. For this reason, the transplanted kidney seems to be more vulnerable to traumatic damage. But there is a paucity of reports that deal with managing such an event.

Case Report

A 67-year-old man presented to the emergency department 22 hours after a bicycle accident. The patient had undergone a renal transplant into right iliac fossa in 2002 because of chronic glomerulonephritis. Serum creatinine stabilized at 0.7 mg/dL. The patient's immunosuppressive drug regimen included only tacrolimus. In the first 10 hours after the accident, he did not experience any particular symptoms, but upon arrival at the emergency department, the patient said he had mild abdominal pain and anuria in the last 12 hours. His blood pressure was 110/70 mm Hg, his hemoglobin concentration was 13.1 g/dL, and his renal function was significantly impaired, with a serum creatinine level of 2.73 mg/dL.

A physical examination revealed diffuse moderate abdominal tenderness. An ultrasonography scan demonstrated extensive periallograft hematoma and high renal arterial resistive indexes, with an empty bladder and no dilation of the upper urinary tract. A computed tomography scan revealed a 4-cm subcapsular hematoma without active bleeding (Figure 1). Urgent decompression of the hematoma was indicated. Surgical exploration confirmed the radiologic findings. Incision of the renal capsula allowed eliminating parenchymal compression without showing active bleeding or other sources of compression. Prompt recovery of diuresis was noted already at the end of the intervention.

There were no postoperative complications. The patient was discharged 9 days after surgery in

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good condition; his serum creatinine level was 0.88 mg/dL. After 6 months, a follow-up creatinine level was 0.81 mg/dL, with the same immunosuppressive protocol. Blood pressure is normal. An ultrasonography scan shows regular graft morphology with normal arterial resistive index.

Figure 1. Computed Tomography Scan Showing 4-cm Wide Subcapsular Hematoma

Discussion

There is a paucity of reports that deal with trauma in kidney grafts. Most of them are secondary to traffic accidents, and often the injury is caused by compression by the seat belt.[1,2] Other authors have reported damages resulting from penetrating or blunt trauma in work-related accidents or physical assault.[3,4]

Many treatments are described, depending on the type and severity of the injury. In the cases described by Akabane and Martinez, large lacerations of the renal parenchymal with bleeding and hemodynamic instability were successfully treated with surgery.[2,4] Interventional radiology also can be used in renal graft trauma. Superselective embolization is performed for many years in kidney transplant to treat arteriovenous or arteriocalyceal fistula after percutaneous biopsy.[5,6] Cabello has described a case of embolization of 2 disrupted upper pole renal artery branches on a grade IV renal laceration.[1]

Grade III and IV renal trauma can be treated with this approach. The success rates for embolization of isolated renal artery branch injuries are 70% to 80%.[7,8] The risk of total renal loss may be lower with angioembolization than with surgical exploration. Currently, the small experience cannot lead to the same conclusions about transplanted kidneys. The 2012 EAU guidelines concluded that vascular injuries of renal transplants may be managed by embolization, but with a high rate of failure and complications and a high eventual nephrectomy rate. Late complications can occur after a traumatic event. A subscapular hematoma causing a Page kidney and nephrovascular hypertension has been described after graft biopsy.[9] It also has been proposed that injuries can induce nonspecific inflammatory response making the graft more immunogenic. Amhed and associates reported acute rejection in a patient 3 months after a complex polar laceration, left untreated because of the lack of symptoms and early complication.[10]

In our case, the subcapsular hematoma led to a slow and progressive compression of the renal parenchyma with increasing of vascular resistances. The absence of active bleeding and visible renal lacerations did not require parenchymal or vascular reconstructions. The evacuation of the hematoma immediately reduced the compression of the parenchyma with prompt resumption of diuresis. No early or late complications occurred, and renal function was rapidly recovered. In this case, the symptoms appeared more than 12 hours after the trauma, and further diagnostic delay could have led to irreversible damage to the transplant.

In conclusion, a subcapsular hematoma complicating a traumatic event in a transplanted kidney can lead to a nonimmediate parenchymal compression resulting in anuria. So, although in the absence of anemia, it requires urgent surgical decompression. Symptoms cannot be immediate, so all the graft trauma should be investigated with early ultrasound and blood examination.

Little is known in the case of major renal trauma but mildly symptomatic. In our opinion, surgical exploration is better than observation to prevent possible early and late complications such as a Page kidney and organ rejection.

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