

## An acute renal infarction due to atrial fibrillation in a transplant patient: a case report

Böbrek nakilli hastada atriyal fibrilasyona bağlı akut renal infarkt: Olgu sunumu

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### ABSTRACT

Acute renal artery thromboembolism is a critical problem requiring rapid diagnosis and treatment. Most reports of renal infarction due to emboli are in patients with atrial fibrillation. Early diagnosis of renal artery thromboembolism is difficult. Patients with acute renal infarction typically complain of flank pain or generalized abdominal pain. Elevated peripheral white blood cell count, serum creatinine concentration and markedly elevated serum lactate dehydrogenase can be seen during renal infarction. In this case report, we describe a renal transplant recipient patient who developed an acute renal infarction due to atrial fibrillation.

**Keywords:** Acute renal infarction; atrial fibrillation; renal artery occlusion; renal artery thromboembolism; renal transplantation.

### ÖZ

Akut renal arter tromboembolizmi hızlı tanı ve tedavi gerektiren kritik bir problemdir. Emboliye bağlı renal infarkt olgularının çoğunluğu atriyal fibrilasyonlu hastalarda görülmektedir. Renal arter tromboembolizminin erken tanısı zordur. Akut renal infarktli hastaların tipik yakınmaları yan ağrısı ve yaygın karın ağrısıdır. Renal infarkt sırasında beyaz küre, serum kreatinin artışı ve belirgin yüksek laktat dehidrogenaz düzeyleri gözlenmektedir. Bu makalede biz, atriyal fibrilasyonlu bir böbrek nakilli hastada gelişen akut renal infarkt olgusunu sunmayı amaçladık.

**Anahtar sözcükler:** Akut renal infarkt; atriyal fibrilasyon; renal arter tıkanıklığı; renal arter tromboembolizmi; böbrek nakli.

Thromboembolic obstruction of major renal arteries is a rare but serious clinical problem. A diagnosis is not usually established until irreversible renal parenchymal damage occurs.<sup>[1]</sup> Because patients present with abdominal or flank pain that mimic other conditions, such as nephrolithiasis and pyelonephritis, the diagnosis is frequently missed or delayed. Most reports of renal infarction due to emboli are in patients with atrial fibrillation (AF), although many patients also have diffuse atherosclerosis.<sup>[2,3]</sup> We describe herein a renal transplant recipient patient who developed an acute renal infarction due to atrial fibrillation.

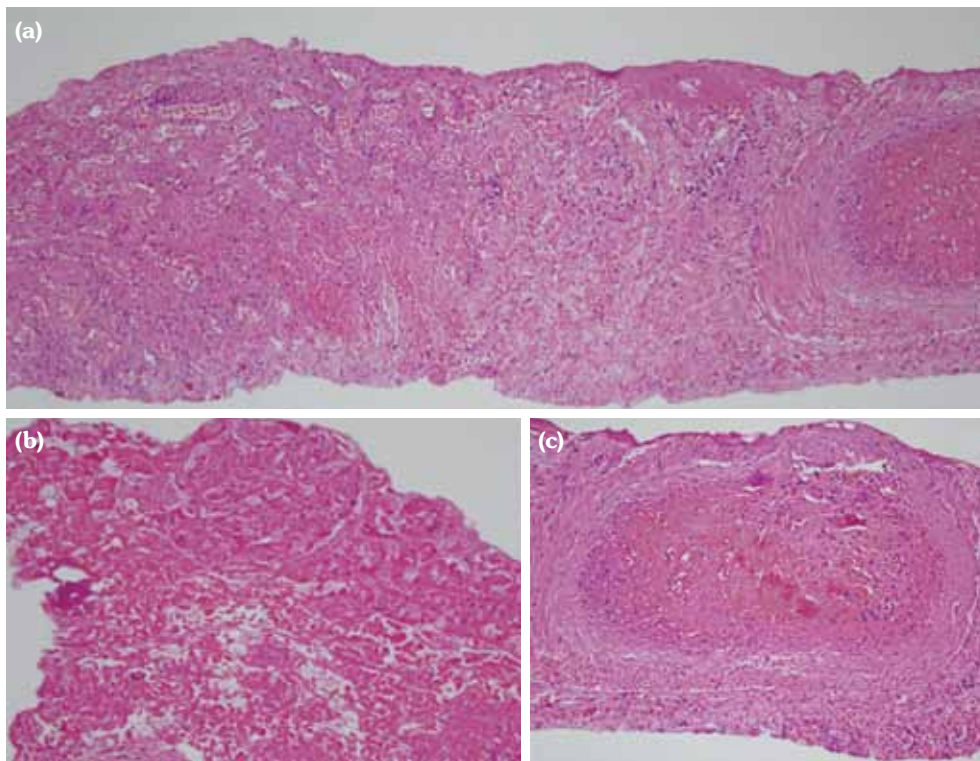
### CASE REPORT

A 78-year-old female was referred to our emergency room due to the sudden onset of pain in her right lower abdomen and cessation of urination for five days. She had history of renal transplantation 28 years ago due to end stage renal disease (ESRD) of unknown origin. She had also chronic atrial fibrillation, treated with aspirin which she has not been taking for a couple of days. Physical examination disclosed blood pressure 160/90 mmHg, temperature 36.8 °C, respiration 20/min and pulse 90/min. Auscultation showed irregular heartbeats with systolic cardiac

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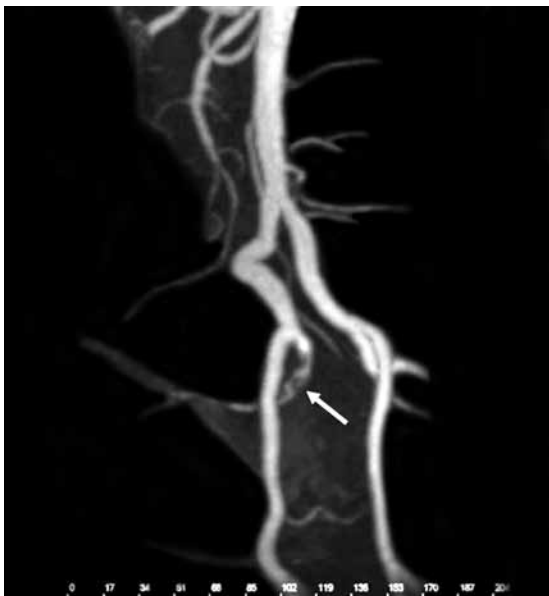
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**Figure 1.** (a, b) Biopsy demonstrates glomerular and tubular necrosis. (a-c) Note the obliteration of the arterial lumen with an organizing thrombus. [(a) H-E x 100, (b, c) x 200].

murmur. Her abdominal examination revealed renal allograft tenderness and there was no rebound tenderness noted. Significant laboratory values at the time of admission included sodium

137 mEq/L, potassium 4.4 mEq/L, pH 7.20, bicarbonate 13 mEq/L, blood urea nitrogen (BUN) 71 mg/dL, creatinine 6.2 mg/dL, lactate dehydrogenase (LDH) 2,548 IU/L (normal range 240-480 U/L), white blood cell count 21,900/ $\mu$ L, hemoglobin 10.4 g/dL, platelet count 193,000/ $\mu$ L. Urinalysis was not noted because of no urine output. Patient was hemodialyzed because of acute renal failure (her last visit Cr was 0.8 mg/dL, 1 week before the admission). Renal artery Doppler ultrasonography was performed and showed no graft hydronephrosis, no perigraft collection, but declined graft perfusion (5 cm/sec) and elevated resistive indexes (RIS). Renal biopsy was performed in order to exclude acute rejection and abdominal magnetic resonance angiography was performed to rule out vascular pathology. Allograft biopsy showed renal infarction (Figure 1). Magnetic resonance angiography revealed total occlusion of allograft renal artery (Figure 2).



**Figure 2.** Magnetic resonance angiographic image.

## DISCUSSION

Acute renal artery thromboembolism is a critical problem requiring rapid diagnosis

and treatment. In 94% of patients, systemic emboli commonly originate in the heart.<sup>[1,4]</sup> The reported incidence of renal thromboembolism in patients with atrial fibrillation was 2% in a series of almost 30,000 patients followed up for to 13 years.<sup>[5]</sup> There have been several reports about acute renal infarction due to renal artery thromboembolism.<sup>[1,6-8]</sup> But the present case was defined in a renal transplant recipient with untreated atrial fibrillation that caused morbidity and mortality.

The cumulative incidence of new-onset AF was 3.6% and 7.3% at 12 and 36 month after transplantation. Risk factors for posttransplantation AF included older recipient age, male gender, white race, renal failure secondary to hypertension and coronary artery disease. New onset AF is common after kidney transplantation and is associated with markedly increased risk for death and death censored graft loss.<sup>[9]</sup>

Early diagnosis of renal artery thromboembolism is difficult. It is not usually diagnosed at the onset of symptoms and early identification is made in <30% of the patients.<sup>[1]</sup> Patients with acute renal infarction typically complain of flank pain or generalized abdominal pain.<sup>[10,11]</sup> Elevated peripheral white blood cell count, serum creatinine concentration and markedly elevated serum LDH can be seen during renal infarction.<sup>[2,4,10,12]</sup>

Prompt recognition of acute renal infarction is important as ischemia can cause irreversible kidney damage in a few hours.<sup>[13]</sup>

Although the occurrence of renal infarction secondary to atrial fibrillation remains rare, acute renal infarction should be considered in a renal transplant recipient presenting with acute onset abdominal pain and acute renal failure with a history of atrial fibrillation.

#### **Declaration of conflicting interests**

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