

Acute Renal Infarction in a Young Woman: A Case Report

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Abstract: We presently report the case of renal infarction in a 31 years old woman who represented in Surgical Emergency Department with severe right flank pain, nausea with 2-3 episodes of vomiting, high temperature and fatigue for over 3 days. She has had one episode with dark urine. On initial investigations including a total blood count, urinary analysis and renal tract ultrasound there was only hematuria and anemia. A CT angiogram was performed due to persisting pain, which demonstrated multiple segmental infarctions of her right kidney. For further evaluation, this patient was hospitalized in Infectious Diseases Department. After all the laboratory, radiological examinations and multidisciplinary medical consultations we excluded thromboembolic, surgical, infectious, hematological, oncological, urological, nephrological and rheumatological causes. The only abnormal finding was a positive antinuclear antibody test. The patient was discharged on the third week of hospitalization.

Keywords: multiple segmental renal infarctions, young woman, computed tomography, Infectious diseases, vasculitis

1. Introduction

Acute renal infarction is a rare condition [1]. In a study of 14,411 autopsies published in 1940, the incidence of renal infarction was 1.4 % [2]. The non-specific presentation of acute renal infarction has led to delayed diagnosis, but with the broad availability of high-quality computed tomography (CT) imaging, it is possible to identify cases early and initiate prompt treatment. The clinical diagnosis of renal infarction is likely often missed due to the nonspecific nature of the symptoms. Flank pain, abdominal pain, nausea and vomiting are the most common presenting symptoms, and these can be mistaken easily for kidney stones or infections. The two major causes of renal infarction are thromboembolic events, which usually originate from a thrombus in the heart or aorta and in-situ thrombosis, which may cause complete occlusion of the main renal artery or a segmental branch artery [3]. In addition to emboli of cardiac origin, hypercoagulability states like antiphospholipid syndrome and polycythemia vera are major risk factors for renal infarction.[4]

2. Case Report

Our case is of a 31 years old white female who was presented to the Surgical Emergency Department in April 2017 with right flank pain, fever, nausea with 2-3 episodes of vomiting, fatigue for over three days. She has had one episode with dark urine. Her medical history was unremarkable. She had three natural labours and took no medications. There was no abnormality upon examination of the abdomen. Chest and heart examinations were normal. Vital signs were normal except core body temperature 38.5°C. Total blood count revealed a WBC $3.8 \times 10^3/\text{mm}^3$, RBC $3 \times 10^6/\text{mm}^3$, HGB 8.3 g/dl. There was a normal serum creatinine, 0.7 mg/dl and urea, 16 mg/dl. Abdominal ultrasound showed only microlithiasis of the gallbladder. In emergency, a contrast abdomen CT scan was performed (Fig.1,2). It showed multiple hypodense wedge-shaped areas

in the right kidney without perirenal inflammatory changes which suggested the diagnosis of multiple segmental renal infarctions. There wasn't any stenosis and vascular filling defects in right renal artery and its branches. Electrocardiogram (ECG) and echocardiography performed in emergency revealed normal cardiac function. In urinalysis was only microhematuria without leukocyturia. Hematological examinations: proteins C and S, folic acid, vitamin B₁₂ and protein electrophoresis were normal. We excluded infectious causes: HIV, Leishmania species, Brucella species, salmonella typhi. Gamma interferon test, Mantoux test, blood cultures and urine culture were negative. Coagulation assays: Prothrombin time (PT), activated partial thromboplastin time (APTT) and fibrinogen concentration were in normal ranges. Other tests that can confirm a rheumatological cause; ENA Screen 0.2, Serum C3 and C4 component levels, Anti-cardiolipin IgG, IgM, Anti-phospholipid IgG, IgM, were normal. There was only ANA positive (++) . During the hospitalization, she did 2-3 other abdominal ultrasounds, another abdominal CT scan and an abdominal MRI with contrast (fig.3,4,5). The radiological consultations showed again that there were multiple patchy renal infarctions with different ages. Treatment consisted of antibiotics, anticoagulants, analgesics, antacids, saline infusions, electrolytes. The patient was discharged after 3 weeks.

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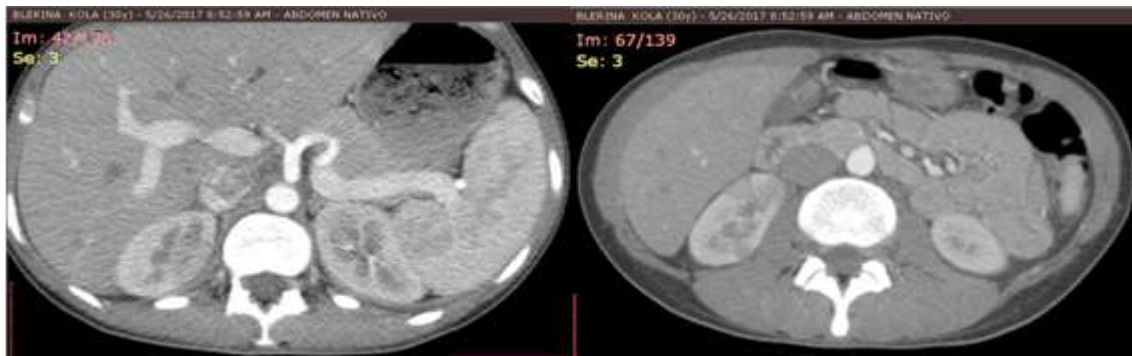


Figure 1: Right kidney hypodense cortical patchy areas, CT- scan arterial phase

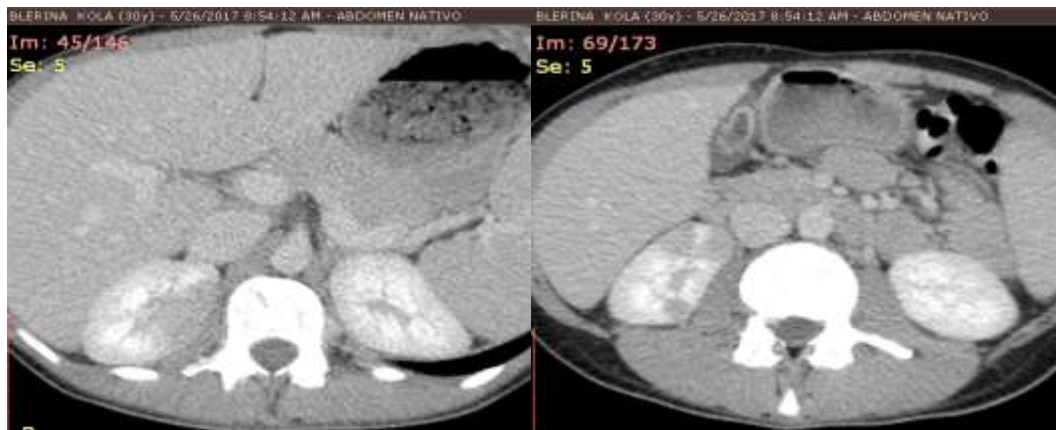


Figure 2: Right kidney hypodense cortical patchy areas, CT-scan nephrogenic phase.



Figure 3: Right kidney hypodense cortical patchy areas, MRIT1-weighted, axial, 22 sec. post contrast.



Figure 4: Right kidney hypodense cortical patchy areas, MRIT1-weighted, coronal, 300 sec. post contrast

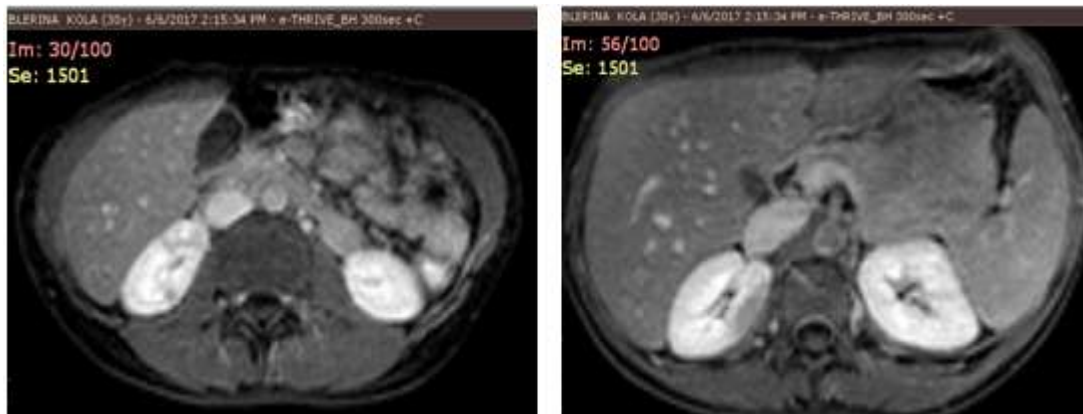


Figure 5: Right kidney hypodense cortical patchy areas, MRIT1-weighted, axial, 300 sec. post contrast

3. Discussion

The clinical presentation in renal infarction is non-specific and overlapping with other more common entities such as infectious or lithiasic kidney disease [5]. The typical patient has an average age between 60 and 70 years, with abdominal or lower back pain, usually constant, accompanied by nausea, vomiting and fever [5, 6]. Hypertension (related with alterations of the renin-angiotensin system) can be a presenting sign for renal infarction [7]. Blood count commonly presents leukocytosis, elevated LDH (some studies describe as typical LDH values of four times higher than normal) and mild elevation of transaminases and C-reactive protein [8, 9].

Our patient was a young woman who presented to the Surgical Emergency Department with a three days history of right flank pain and with only a unique episode of dark urine as a urinary tract symptom. The abdomen was soft and without tenderness. In abdominal ultrasound there was no signs of acute abdomen. Also there was no leukocytosis neither leukocyturia. In these conditions it was excluded a surgical and urological pathology. In these conditions this patient was referred to the Infectious Emergency

4. Conclusion

In summary, renal infarction is an easily missed disease due to its nonspecific presentation. This case report highlights the importance of considering renal infarction in the differential diagnosis in patients presenting with acute unilateral flank pain. Even in patients with low risk of developing a renal infarction a suspicion should exist. The diagnosis can be established with various laboratory and radiological

Department. Our initial clinical assessment was a noninfectious cause on the basis of clinical and laboratory values. In these conditions, we recommended a contrast CT scan of the abdomen. It showed multiple renal wedge-shaped parenchymal defects that involve both the cortex and medulla. There was no evidence of renal hydronephrosis neither inflammatory changes in urinary tract. The presence of a thin rim of capsular enhancement (cortical rim sign), the absence of perirenal inflammatory changes, and the location of the lesions apart from defined calyces suggested the diagnosis of renal infarction rather than non abscessed acute pyelonephritis.

Absence of significant stenosis and vascular filling defects in right renal artery and its branches, normal electrocardiogram (ECG) and echocardiography showed that embolic and in-situ thrombosis were not the causes. During hospitalization we made multiple medical consultations with cardiologists, surgeons, hematologists, oncologists, urologists, nephrologists and rheumatologists. But no one could give a cause to this renal infarction. The only abnormal finding was a positive antinuclear antibody test. In these conditions we hypothesized a small vessels vasculitis.

techniques. A Contrast-enhanced CT should be performed in a patient with thromboembolic risk factors, clinical presentation compatible to renal infarction and with an apparently normal non-enhanced CT study.

It is essential to establish an early diagnosis to improve the long term outcome

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