

Idiopathic Renal Infarct as a Rare Cause of Acute Abdominal Pain: A Case Report and Review of Literature

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Abstract

Renal infarction is a very rare disease. Due to the non-specific clinical presentation, diagnosis is often missed or delayed. As the result, a prolonged period of ischemia and irreversible renal damage is common. The broad availability of high-quality computed tomography (CT) imaging has made it possible to identify the cases early and initiate prompt treatment. We report a case of renal infarction that presented with acute abdomen. A 56-year-old man with the medical history of hypertension and diabetes mellitus presented to emergency department with a complaint of sudden onset of severe right lower abdominal pain for 1 day. CT scan of abdomen with contrast showed the striated appearance of the right kidney with hypoperfusion and wedge-shaped hypodensities throughout the kidney. After an extensive workup, no apparent cause of renal infarct was found. Due to the absence of underlying cause of atrial fibrillation or hypercoagulable disorder, no anticoagulation was started and he was discharged home on aspirin. Although the incidence of renal infarction is uncommon, it should always be suspected in the patient presenting with flank pain with nausea, vomiting, and fever, especially in presence of risk factor like atrial fibrillation and elevation of lactose dehydrogenase (LDH) with normal or mildly elevated aminotransferases. Early diagnosis and management of renal infarction is important to prevent a prolonged period of ischemia and irreversible damage.

Keywords: Renal infarction; Flank pain

Introduction

Renal infarction is a very rare disease [1]. Due to the non-

specific clinical presentation, diagnosis is often missed or delayed. As the result, prolonged period of ischemia and irreversible renal damage is common [2]. The broad availability of high-quality computed tomography (CT) imaging has made it possible to identify the cases early and initiate prompt treatment [3]. We report a case of renal infarction that presented with acute abdomen.

Case Report

A 56-year-old man with medical history of hypertension and diabetes mellitus presented to emergency department with complaint of sudden onset of severe right lower abdominal pain for 1 day. History was negative for urinary symptoms, constipation or diarrhea, trauma to abdomen or alcohol abuse. Three weeks prior, he was admitted in intensive care unit for suicidal attempt with acetaminophen overdose. History was negative for fever, chills, joint pain, rashes or kidney stones. Vital signs in emergency department showed BP 145/74, HR 87/min, RR 16/min, and temperature 36.3 °C. Systemic examination was positive for mild tenderness at right lower abdomen and severe tenderness at right costovertebral angle. Chest exam was normal, cardiovascular exam revealed systolic murmur at the mitral area and patient said he was told to have murmur in the past. Initial lab tests revealed WBC 16,650, Hb 14.4 g/dL, and platelet 432,000. Urinalysis showed WBC 6 - 10, RBC 3 - 5, negative leukocyte esterase and nitrite. Liver function showed ALT 77, AST 116, LD 1,051 with normal bilirubin, albumin and INR. Liver function was probably deranged from recovering liver injury from acetaminophen overdose but LD was disproportionately high. Urine drug screen was negative. CT scan of abdomen with contrast showed striated appearance of the right kidney with hypoperfusion and wedge-shaped hypodensities throughout the kidney (Figs. 1 and 2). Given radiographic appearance, acute onset, and evidence of leukocytosis, pyelonephritis versus multifocal infarction were suspected. He was started on antibiotics for pyelonephritis. But the clinical picture was more favorable for kidney infarction due to absence of fever, urinary symptoms and normal urinalysis. Urine culture showed mixed flora. Ultrasound with Doppler study showed relative decrease in blood flow within the right peripheral renal cortex compared to the left and the study was negative for renal artery stenosis. Lactate dehydrogenase was elevated to 1,051 at admission, peaked

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no anticoagulation was started and he was discharged home on aspirin.

Discussion

Renal infarction is a rare cause of abdominal pain. In a study done in 1940, review of 14,411 autopsies revealed renal infarction in 205 patients, with incidence of 1.4% [4]. In another study, out of 250,000 patients seen in the emergency department, only 17 were diagnosed with acute renal infarction [5]. Although very few cases are reported, incidence of renal infarction is probably higher, as diagnosis is often missed or delayed as the presentation overlaps with other common conditions like nephrolithiasis and pyelonephritis [6]. Causes of renal infarction can be divided into cardiogenic thromboembolism originating in heart or aorta and *in situ* thrombosis. In a case series of 438 patients done over 20 years, cardiogenic origin was the most important cause of renal infarction accounting for 55% of cases with atrial fibrillation being the most common cause [7].

Patient with renal infarction presents with acute onset flank pain associated with nausea, vomiting and fever [2, 8]. Patient is often hypertensive at presentation because of activation of renin angiotensin-aldosterone system [2, 5]. Hematuria and proteinuria with elevation of serum creatinine is common in renal infarction [7]. Interestingly, elevation of lactose dehydrogenase (LDH) is very common in renal infarction. In clinically suspected patients, elevation of LDH with normal or mildly elevated aminotransferases is strongly suggestive of renal infarction [2, 3, 8]. As mentioned earlier, diagnosis of renal infarction is often delayed due to absence of classic symptoms on presentation. Contrast-enhanced CT is often diagnostic with feature of wedge-shaped perfusion defect [3, 9].

Treatment approach of renal infarction depends on time period of symptom onset to diagnosis, type and severity of renal artery occlusion, presence or absence of persistent hypertension and underlying disease. In presence of clear indication secondary to underlying disease like atrial fibrillation, left ventricular thrombus or any other hypercoagulable state, anticoagulation is beneficial but the role of prophylactic anticoagulation in the absence of a hypercoagulable state or an embolic source is less certain [2, 3, 5, 8]. Clinical judgement based severity of disease and presence of other co-morbidities is necessary in such cases. In our patient, we did not find any underlying cause needing anticoagulation. He was started on aspirin without anticoagulation due to absence of evidence of

benefit of prophylactic anticoagulation.

Conclusion

Although the incidence of renal infarction is uncommon, it should always be suspected in patient presenting with flank pain with nausea, vomiting and fever, especially in presence of risk factor like atrial fibrillation and elevation of LDH with normal or mildly elevated aminotransferases. Early diagnosis and management of renal infarction is important to prevent prolonged period of ischemia and irreversible damage.

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