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.

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. 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
at 2,049 and decreased to 733 at the time of discharge. Due to disproportionate rise of lactate dehydrogenase, renal infarct was the more likely cause. Electrocardiogram showed normal sinus rhythm with no evidence of atrial fibrillation. The patient developed fever during hospital stay and blood culture was positive for methicillin sensitive *Staphylococcus auricularis*. Transthoracic echocardiogram was normal, but due to persistent fever, transesophageal echocardiogram was done that showed no vegetation and showed trivial mitral and tricuspid regurgitation with normal left ventricular ejection fraction.

Lab tests were negative for antinuclear antibody, antinuclear cytoplasmic antibody, hepatitis B, hepatitis C and HIV. CT angiogram showed normal aorta, normal main renal arteries without evidence of dissection, luminal irregularity, or ostial stenosis (Figs. 3 and 4). Hypercoagulable study was negative for Lupus anticoagulant panel, antithrombin III deficiency, protein C and protein S deficiency and factor V Leiden mutation. After extensive workup, no apparent cause of renal infarct was found. Due to absence of underlying cause of atrial fibrillation or hypercoagulable disorder,
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.

References