Renal Infarction with Right Lower Quadrant Pain: A Pitfall in the Emergency Department

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Renal infarction is frequently misdiagnosed due to nonspecific clinical presentation. High index of suspicion is warranted for the diagnosis of renal infarction. We presented a rare case of renal infarction presented as right lower quadrant pain mimicking acute appendicitis.

Key words: acute abdomen, right lower quadrant pain, renal infarction

Introduction

Renal infarction is a rare disease with the estimated incidence rate in the emergency department (ED) of about 0.007% (1,2). Renal infarction is frequently misdiagnosed or delayed diagnosed due to nonspecific clinical presentations. Patients with renal infarction most often present with abdominal pain, nausea, vomiting and fever. It is difficult to make accurate diagnosis in the emergency department because it often resembles other more common diseases such as lumbago, peptic ulcers, urolithiasis and other abdominal lesions (3,4). Renal infarction is commonly diagnosed incidentally when patients presented with intractable abdominal pain and computed tomography of the abdomen was arranged. We presented a 32-year-old patient who came to the emergency department complained of intolerable right lower quadrant pain and the tentative impression of acute appendicitis was made.

Case Report

A 32-year-old man without systemic disease presented to the emergency department with sudden right lower quadrant pain for 7-8 hours. Vomiting, tenesmus with loose stool passage and poor appetite were noted. He denied of bloody vomitus, diarrhea, tarry stool passage, dysuria, flank pain, hematuria, fever, or even trauma history. Vital signs were stable with body temperature of 36.1°C, blood pressure of 142/92 mmHg, pulse rates of 80 beats/min, respiratory rate of 18 breaths/min, and oxygen saturation of 100% in room air. Physical examinations revealed regular heart beats, normoactive bowel sounds, right lower quadrant tenderness without guarding or rebound pain, and no costovertebral knocking pain. Under the impression of renal colic, focused ultrasound was performed and urinalysis arranged. Ultrasound showed no obvious renal stones, hydronephrosis or any anatomical abnormality of kidneys and urinalysis results were relatively within normal limits. Laboratory datas showed elevated white blood cells of 16400/μL (Segment 84%), C-reactive protein < 0.5 mg/dL, creatinine 0.87 mg/dL, and LDH of 186 IU/L. Due to intractable pain despite aggressive pain control with NSAIDs and narcotic analgesics, intravenous contrast computerized tomography was arranged.
Computed tomography of the abdomen was arranged. The computed tomography disclosed a hypodense area involving the lower pole of the right kidney which is consistent with lobar infarction of right kidney (Fig. 1, 2). He was then admitted to the cardiovascular ward and anticoagulation with heparin was given immediately. During admission, cardiac echo had performed and revealed unremarkable findings. Coagulopathy and clotting studies included prothrombin time, activated partial thromboplastin time, protein C, protein S, antithrombin III, C3c, C4, anticardiolipin antibody and homocysteine showed negative findings. The patient responded well to the treatments was discharged after 3-days of observational periods. The cause of renal infarction for this patient is yet to be determine.

**Discussion**

Renal infarction is frequently underdiagnosed and overlooked in the emergency department due to nonspecific initial presentation. It is often delayed in diagnosis. The exact incidence of renal infarction is estimated between 0.007% and 0.004% in studies and 1.4% in autopsy findings\(^4\). The diagnosis of acute appendicitis is usually made by history and detail physical examination by the hands of surgeons. The decision to perform an abdominal CT scan is also made after the surgeons exclude acute appendicitis and suspect of other causes. In a study done on 221 patients who had operations for suspected appendicitis, the diagnosis was confirmed in 79% (175/221) patients. The remaining 21% (46/221) patients had other diagnosis\(^1\). Acute renal infarction has only been reported previously in few cases with an appendicitis-like clinical picture\(^2,3\).

Renal infarction occurs mostly in the sixth to eighth decade of life. Cardiac related causes in renal infarction are atrial fibrillation, myocardial infarction, and rheumatic mitral stenosis. Other aetiolologies may include valvular heart disease, prosthetic valves, atrial or ventricular thrombi, arteriosclerosis, polyarteritis nodosa, lupus erythematosus, trauma, polycythemia vera and patients without underlying disease\(^4,6\). The patients may complain of abdominal pain, back pain, flank pain, nausea, vomiting, fever and chills\(^4\).

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Fig. 1  Computed tomography coronal view (bold arrow) of the abdomen shows kidney infarction over right lower pole of the kidney

Fig. 2  Computed tomography of the abdomen reveals lower pole kidney infarction (bold arrow)
Hematuria, leukocytosis, and elevated lactate dehydrogenase (LDH) support the diagnosis of renal infarction. Most patients with renal infarction usually have hematuria (54-100%) and elevation of LDH (91-100%)\(^9\). The diagnostic is made with angiography (10/10, 100%), renal isotope scan (36/37, 97%), contrast-enhanced CT (12/15, 80%), and ultrasound (3/27, 11%)\(^9\). The diagnosis is usually based on exclusion of other diseases and clinical suspicion of the disease.

Standard therapeutic protocols for treatment of renal infarction have not yet been clarified. Intraarterial thrombolytic therapy, anticoagulation, aspirin and surgical embolectomy are treatment options that are beneficial to the patient with renal infarction if applied early\(^4,7,8\). Only rare patients with renal infarction had been reported to develop renal insufficiency or even dialysis-dependent\(^8\). One study showed that the overall mortality rate of renal infarction during admission was 13.2% in Asian population\(^9\). The cause of death was usually not the renal farction itself but rather the underlying disease and its complications. In our case, the patient was treated early with anticoagulation therapy (heparin). The renal functions in our patient was not impaired and he was discharged after a 3-days observation period.

Renal infarction should be considered as part of the differential diagnosis for the patients presenting to the emergency department with intractable abdominal, back or flank pain. Although the standard diagnostic tool for renal infarction is angiography, the lack of access and the invasive nature of this examination limit its use in the emergency department. Contrast-enhanced CT scan is the diagnostic modality most commonly used to diagnose renal infarction for emergency physician.

References

右下腹痛

右腎梗塞以右下腹痛表現

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腎梗塞因具有非特異性臨床表現而常常被誤診或延誤診斷。高度敏感度，詳細理學檢查，及病史詢問可以避免延誤診斷之發生。我們提出了一個以右下腹疼痛酷似急性闌尾炎罕見的腎梗塞病例並加以討論。

關鍵詞：急性腹痛，腎梗塞，右下腹疼痛