CT FINDINGS OF RENAL ACTINOMYCOSIS: A CASE REPORT

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Abdominal actinomycosis is very uncommon and difficult to diagnose.[1] Within the abdomen, the gastrointestinal tract, particularly colon and appendix, are the most common organs involved.[2] Recent reports have indicated an increased prevalence of pelvic actinomycosis in women who use intrauterine contraceptive devices.[3-5] Renal involvement is extremely rare, but has been anecdotally reported.[6-8] CT findings of renal actinomycosis has been described only once in the English literature.[8] Therefore, we would like to report a case of renal actinomycosis, emphasizing the CT features that may lead to the diagnosis of this chronic infection.

CASE REPORT

A 17-year-old woman presented with a 2-month history of left flank pain and low-grade fever. She experienced gross hematuria only once during this illness. Previously, she had been healthy, had never used an intrauterine device (IUD) for birth control and had no history of abdominal surgery. Physical examination revealed mild tenderness at the left flank and a palpable but ill-defined mass in the left upper quadrant. The body temperature was within normal limits. The complete blood count and urine analysis were normal.

An excretory urogram was performed which revealed a space-occupying mass in the lateral aspect of the grossly enlarged left kidney with compression of its pelvocalyceal system. The ultrasonography of the abdomen showed a large, heterogeneous, predominantly low-echoic mass involving the left kidney. Plain CT scan of the upper abdomen showed global enlargement of the left kidney with relative preservation of its renal shape (Fig. 1A). After intravenous administration of contrast material, only the superomedial aspect of the left kidney showed normal nephrogram and excretion. The rest of the kidney was infiltrated and less dense than the normal nephrogram. Slight enhancement within this infiltrated area was noted, presenting a reticular pattern (Fig. 1B). The lesion extended to involve the perinephric fat, renal fascia and anterior pararenal space. The pancreatic tail and the adjacent colon seemed to adhere to the lesion. There was no evidence of thrombus within the left renal vein or inferior vena cava. Based upon the imaging findings, neoplasm such as lymphoma or renal cell carcinoma was suggested.

The patient underwent exploratory surgery. The left renal mass was found to adhere to the spleen, tail of the pancreas, splenic flexure of the colon and left adrenal gland. En bloc resection was performed. The gross pathologic findings showed an ill-defined infiltrative lesion with a yellowish cut surface compressing the left renal pelvis. The resected segment of colon contained a perforated ulcer, measuring about 0.5 cm. in diameter. Microscopic examination of the left

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kidney revealed acute and chronic inflammation with scattered foci of actinomycotic abscesses containing colonies with sulfur granule appearance.

The patient was given an extended course of penicillin G and after marked clinical improvement, was discharged from the hospital.

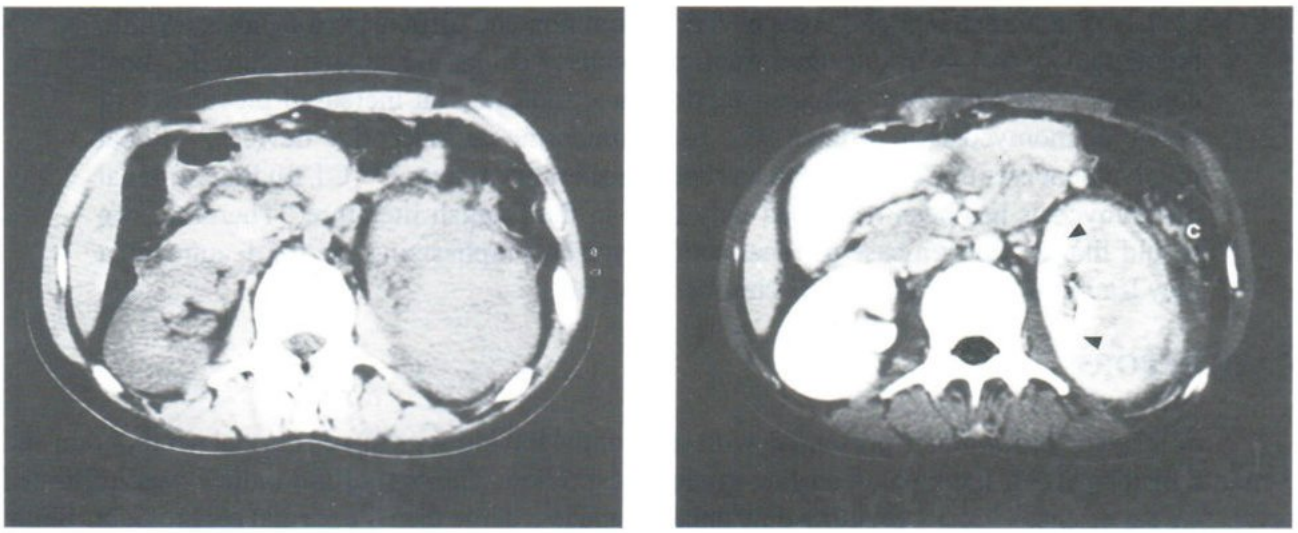

Fig. 1. A 17-year-old female with a 2-month history of left flank pain and low-grade fever.

A. Plain CT shows a global enlargement of the left kidney with relative preservation of its renal shape.

B. CT, after intravenous contrast enhancement, shows low density infiltrative lesion involving almost the entire kidney and extending to perinephric fat, renal fascia, and anterior pararenal space. Slight reticular enhancement within the infiltrative lesion is observed. The descending colon (C) is adhered to the lesion. Note minimal area of normal nephrogram and excretion at the medial aspect of the left kidney (arrowheads).

DISCUSSION

Actinomycosis is a variety of gram-positive, anaerobic or microaerophilic bacterial infection that can affect virtually any site in the body.[9] Classic actinomycosis is caused most often by Actinomycoses israelii, which is a normal inhabitant of the gastrointestinal tract.[9] The pathogenesis of actinomycosis is disruption of the mucosal barrier by trauma, surgery, or bowel perforation that will permit these organisms to invade surrounding tissues.[10] Not infrequently, the disease occurs without obvious predisposing factors, which makes the diagnosis difficult.[2]

Most cases of actinomycosis involve the cervicofacial area; the proportion of all cases in this site is as high as 63%.4 Abdominal involv-

ement has been reported in approximately 20% of cases, of which the appendix and colon are the most common organs involved.[2] Pelvic actinomycosis is increasing and is associated with use of intrauterine devices.[3-5] Renal involvement is extremely rare, but can occur as a result of hematogenous dissemination from a cryptic or defined, non-contiguous source, or from direct extension within the peritoneum.[6-8] In our case, we believe that the perforated left-sided colon, found on surgery, was a source of contiguous spread of the infection to the left kidney, although there were no clinical symptoms suggestive of this prior to the time of operation.

Diagnosis of abdominal actinomycosis is always a challenge. It has been called "the most misdiagnosed disease", and part of the reason is because of its rarity.[11] In our case, CT correctly identified the infiltrative mass within the left kidney with evidence of transfascial involvement. By virtue of its invasiveness and long clinical course, neoplasm was highly suggested. Chronic infection or inflammation was not even in the differential diagnosis. Retrospectively reviewed in our case, CT actually showed a clue that the lesion might have been an infectious process. On contrast-enhanced CT scan, there was a reticular pattern of enhancement within the infiltrative lesion. This pattern may reflect multiple small abscesses clustering together. This CT observation has not been described in an anecdotal report of renal actinomycosis.[8] In that report, renal actinomycosis was described on CT as an infiltrative lesion with invasion of normal anatomic barriers.[8] These findings were also noted in our case, but could not be differentiated from neoplasm. As detected retrospectively in our case, we propose that CT images be carefully scrutinized for a reticular pattern of enhancement within the infiltrative lesion, if found, the infectious etiology is more likely. A suggestion of infection by the radiologist may be important, since the wider differential diagnosis may influence the clinician to perform percutaneous biopsy instead of nephrectomy. Actinomycosis usually responses very well to antibiotics, thus its diagnosis may allow the patient to avoid sacrifice of the kidney. Unfortunately, this was not the case in our patient and nephrectomy was performed.

In conclusion, although rare, actinomycosis should be in the differential diagnosis of an indolent intrarenal lesion, along with tuberculosis, fungal infection and neoplasm. CT scan is a good imaging modality for determining invasiveness of the process and, if accompanied by a reticular enhancement pattern in the invasive lesion, infectious etiology, should be highly considered.

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