Case Report

Renal tuberculosis mimics renal cell carcinoma

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Abstract

The prevalence of renal tuberculosis (TB) in Thailand is high, but few reports have been published with regard to this issue. This report concerns the case of a 34-year-old Thai female with large masses in the right kidney, liver, and an enlarged lymph node in the abdominal cavity. The renal mass appeared to resemble the end stage of a carcinoma, but the pathology report of renal tissue indicated suspected tuberculosis. The patient was treated with TB medication for 6 months. A computerized tomography scan of the abdominal cavity after 6 months showed that there was no evidence of disease remaining

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Introduction

Tuberculosis (TB) of the kidney is more frequently found to be unilateral than bilateral and is more prevalent in males than in females.[1] The World Health Organization (WHO) estimates that since 2015, tuberculosis has surpassed infection with human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS) as the leading cause of death from an infectious disease worldwide and that almost one-third of the world's population (2.5 billion people) are infected with Mycobacterium tuberculosis. Approximately 95% of TB cases occur in the developing world. The highest number of cases are in Asia, followed by Africa, and the eastern Mediterranean region.[2]

Genitourinary TB remains important, but is an uncommon form of TB. In 1999, 1.2% of patients in New York City were recorded as having the genitourinary tract as the primary site of disease (New York City Department of Health, 2000). Genitourinary TB is caused by the metastatic spread of the organism through the bloodstream during the initial infection.

The kidney is usually the primary organ infected in urinary tract disease, and other parts of the urinary tract become involved by direct extension.

Genitourinary tract TB is often manifested as repeated urinary tract infections that do not respond to the usual antibiotics.[3]

Renal TB is the most likely diagnosis in patients who present with pyuria and hematuria and who have negative urine cultures. Evidence suggests that granulomatous tubulointerstitial nephritis is the most frequent histopathologic manifestation of renal TB.[4]

TB is a disease induced by the Mycobacterium tuberculosis (MT) which causes a granulomatous immune reaction and a typical tissue

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necrosis called "caseous necrosis."[5]

Case Report

A 34-year-old Thai female came to the hospital 3 months ago presenting with a large abdominal mass, fever at night, weight loss of 10 kg, no lower urinary tract symptoms, and no underlying disease.

Clinical examination revealed the presence of a large abdominal mass, 15 cm in diameter, which was moveable and non-tender.

Investigations

Blood investigations showed no signs of inflammation (WBC 9,630, Hct 36.5%, Plt 540,000, Neutrophil 56.0% Lymphocyte 36.7%), and were negative for HIV. There was no evidence of pyuria in the urine examination, and liver function test and kidney function test were normal. Computerized tomography (CT) scan showed an infiltrative tumor inside the right kidney causing nephromegaly, 13x9.6x7.7 cm in size with moderate right hydronephrosis. Other findings were matted, multiple enlarged peri, para-aortic nodes, and pelvic nodes 0.5-1.8 cm, multiple metastasis nodules 0.5-2.7 cm at both lobes of the liver with marked hepatomegaly. The impression from the CT scan is renal cell carcinoma at the right kidney with metastases in the liver, right adrenal gland, and lung (Figure 1).

However, a fine needle aspiration of liver mass was negative for malignant cells. Following consultation we decided to treat by open right cytoreductive nephrectomy.

The pathology report from the nephrectomy showed a multinodular yellow-white necrotizing granulomatous area of inflammation, 15.5x8x8 cm in the right kidney and necrotizing granulomatous lymphadenitis in the lymph node (Figure 2).

After the operation, the patient gained 10 kg in weight and had no fever. However, the patient had a recurrence of urethral stricture and also presented with pyuria. A CT scan showed multiple liver metastases (Figure 3), the cystoscope revealed multiple small nodules in the bladder and the pathologic report from the biopsy cited necrotizing granulomatous cystitis and the culture was negative for TB.

Our final diagnosis was genitourinary tuberculosis and the patient was treated with anti-TB drugs (2IRZE/4IR) for 6 months. The follow-up CT scan showed no evidence of disease in the intra-abdominal lymph nodes and no liver mass was found.

Discussion

Tuberculosis is an infectious, inflammatory, reportable chronic disease usually affecting the lungs, although it may occur in almost any part of the body (extrapulmonary). Urogenital TB represents 27% of extrapulmonary cases. Renal involvement with TB infection is underdiagnosed in most healthcare centers. Most patients with

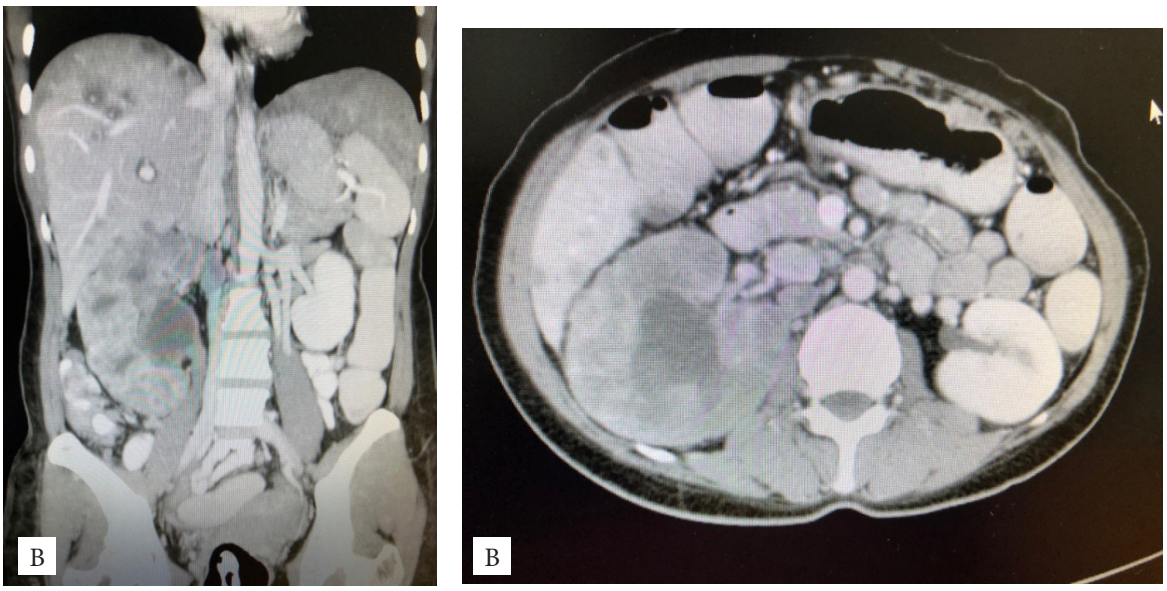

Figure 1. CT scan (A. coronal view, B. axial view) showing right large kidney mass with contrast enhancement, multiple lymph nodes and liver metastasis

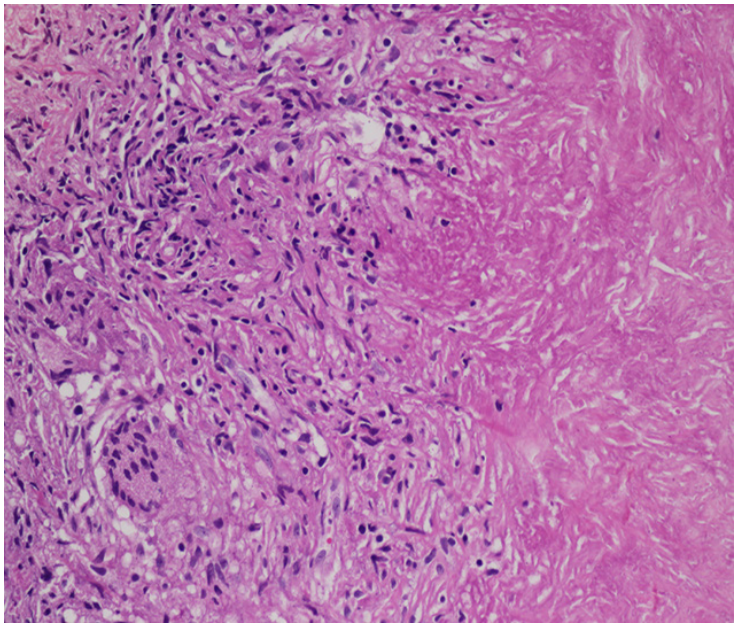

Figure 2. Pathological section showing necrotizing granulomatous inflammation (HE stain x100)

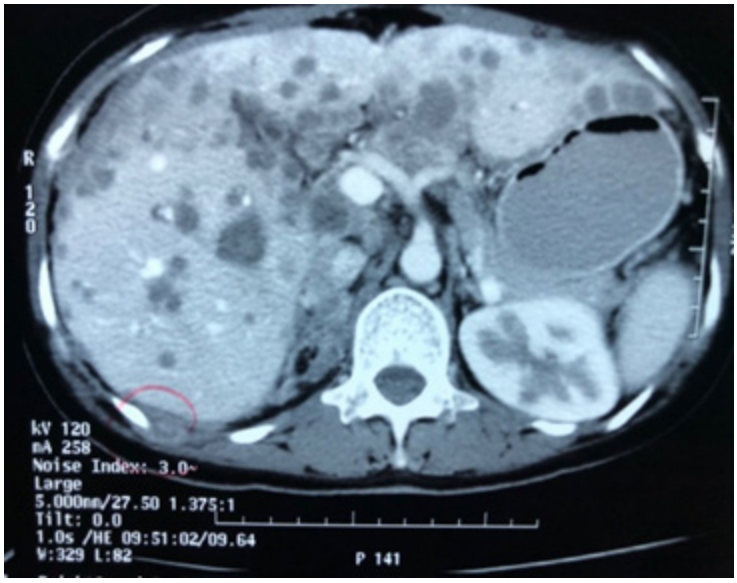

Figure 3. CT scan 1 month after surgery showing multiple liver masses.

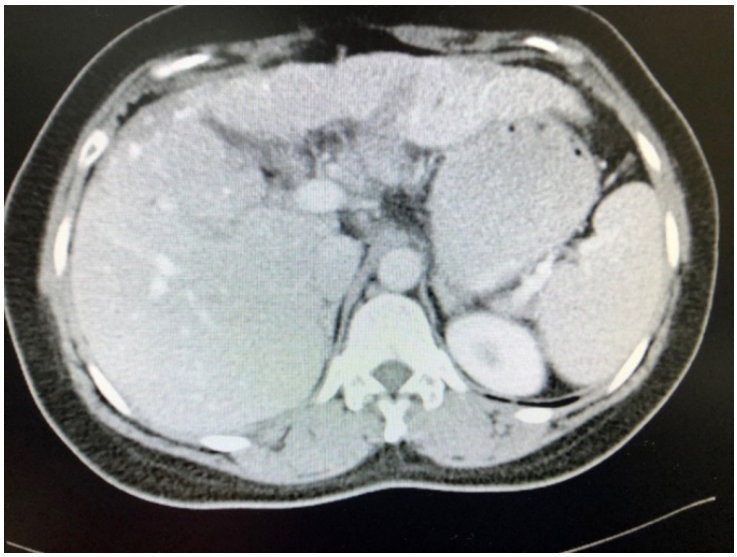

Figure 4. Second CT scan showing improvement in liver mass after completion of treatment with anti-TB medication

renal TB have sterile pyuria, which can be as a result of microscopic hematuria in the absence of a common bacterial infection.[6]

The diagnosis of tuberculosis is formulated based on medical history, clinical signs, instrumental examinations, and the search for the Koch bacillus in lung sputum, pleural fluid, urine, cerebrospinal fluid, lymph node biopsies, cytology, PCR for TB, etc. CT abnormalities reported from renal tuberculosis CT features are varied and depend upon the stage of the disease. They result, in the main, from a combination of papillary necrosis and parenchymal destruction. Typically, the papillae are involved first and are followed by cortical damage. The nodules are variable in size, there are well-defined parenchymal lesions on cross-sectional images which may mimic renal neoplasms, leading to unnecessary surgery; these are therefore labeled as "pseudo-tumoral" as was observed in this case.[7] The differential diagnosis for the imaging appearance of renal tuberculosis includes chronic pyelonephritis, papillary necrosis, medullary sponge kidney, caliceal diverticulum, renal cell carcinoma, transitional cell carcinoma and xanthogranulomatous pyelonephritis.

The TB kidney typically clinically presents with sterile pyuria, bilateral kidney lesion, and non-functioning of the kidney. Symptoms of genitourinary TB reported in a large series of patients have included dysuria, frequency or urgency (31-65%), hematuria (30-43%) and flank pain (21-57%), with fever being infrequent (12-33%).[8] However in this case, the findings were rare because the patient presented with a unilateral kidney mass, no urinary tract symptoms, and a CT scan showed contrast enhancement of the kidney mimicking renal carcinoma stage 4.

Classically the indications for nephrectomy are: (1) a nonfunctioning kidney with or without calcification, (2) extensive disease involving the whole kidney, together with hypertension and UPJ obstruction, and (3) coexisting renal carcinoma. For this case study an open radical nephrectomy was selected because the kidney mass mimicked renal cell carcinoma from a CT scan. From the pathology report, we diagnosed TB of the kidney as the report showed necrotizing granulomatous inflammation and leading us to treat with anti -TB drugs. (This was before the results of the PCR for TB). Follow-up CT scans after completion of the course of anti-TB drugs, showed that all the tumor mass had gone (Figure 4).

Conflict of Interest

The author declares no conflict of interest.

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