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Inflammation and infection

Renal tuberculosis mimicking cystic renal cell carcinoma: A case report

Kays Chaker [a,*], Nader Gharbia [a], Alia Zehani [b], Boutheina Mosbahi [c], Samar Zribi [c], Yassine Nouira [a]

[a] Urology Department, LA RABTA Hospital, Tunis, Tunisia
[b] Pathology Department, LA RABTA Hospital, Tunis, Tunisia
[c] Anesthesiology Department, LA RABTA Hospital, Tunis, Tunisia

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ABSTRACT

Renal tuberculosis is a rare and often under-recognized condition, frequently leading to delayed diagnosis due to its nonspecific symptoms and atypical clinical presentation. We report a case of renal tuberculosis initially masquerading as a renal cystic tumor in a 56-year-old woman. This case highlights the crucial importance of a thorough clinical and diagnostic approach to differentiate renal tuberculosis lesions from renal cystic tumors. Early and appropriate management of this condition can help avoid complications and improve patient prognosis.

1. Introduction

Renal tuberculosis is an uncommon manifestation of extrapulmonary tuberculosis, accounting for approximately 5 % of such cases.[1] The high oxygen tension in the renal cortex favors renal localization.[2] This condition is often overlooked due to its atypical clinical presentation, which can lead to diagnostic errors and delays in appropriate management. In this article, we present a rare case of renal tuberculosis initially misdiagnosed as a renal cystic tumor, highlighting the importance of a meticulous diagnostic approach.

2. Case presentation

A 54-year-old female patient, with multiple comorbidities, including diabetes, and hypertension, hospitalized for total hematuria evolving for 4 months, weight loss, decreased appetite, generalized weakness, and right lumbar pain without fever. Clinical examination reveals a BMI of 27 kg/m^2, mild right lumbar tenderness, and a palpable mass. The general examination found a blood pressure of 110/80 mmHg and a pulse of 84 bpm. The physical examination found a palpable mass in the right lumbar fossa, no varicocele, and no low limb edema. The urine cytobacteriological examination was negative. She had a hemoglobin level of 12 g/dl, a calcium level of 2.15 mmol/l, and a creatinine level of 8 mg/l. Abdominal computed tomography (CT) showed a well-defined 24 mm right mediorenal cyst with an irregular wall that enhanced after the injection of contrast material, along with thick, irregular calcifications classified as Bosniak 3 (Fig. 1). The patient underwent an open radical right nephrectomy by lombotomy. No post-surgical complications were observed in the aftermath of the surgery. Histopathological analysis of the specimen revealed multiple confluent caseating granulomas accompanied by dense inflammatory areas extending into the perinephric fat, indicative of renal tuberculosis (Fig. 2). The patient had received the Bacille Calmette-Guérin (BCG) vaccine during childhood. A tuberculin skin test revealed an induration of 14 mm, and ten urine samples were collected for mycobacterial culture along with bronchoalveolar lavage specimens. All cultures for mycobacteria returned negative results. However, a QuantiFERON-TB Gold test (Quest Diagnostics, Secaucus, NJ, USA) yielded a positive result. The patient was treated with antituberculosis medication for six months and remained in good health during a 48-month follow-up period.

3. Discussion

Urogenital tuberculosis is usually a consequence of local reactivation following hematogenous dissemination of *Mycobacterium tuberculosis* to the renal cortex during primary pulmonary infection. The renal cortex is also frequently involved with miliary tuberculosis when multiple granulomas are present.[2] The clinical presentation of urogenital tuberculosis consists of mostly nonspecific symptoms such as frequent urination, pyuria, dysuria, flank pain, fever, and weight loss.[3] Renal seeding following hematogenous spread from the primary site of infection is followed by formation of small inactive granulomas, which give rise to

* Corresponding author. La RABTA hospital, department of Urology, BAB SAADOUN, 1006, Tunis, Tunisia.
E-mail address: kays.chaker@fmt.utm.tn (K. Chaker).

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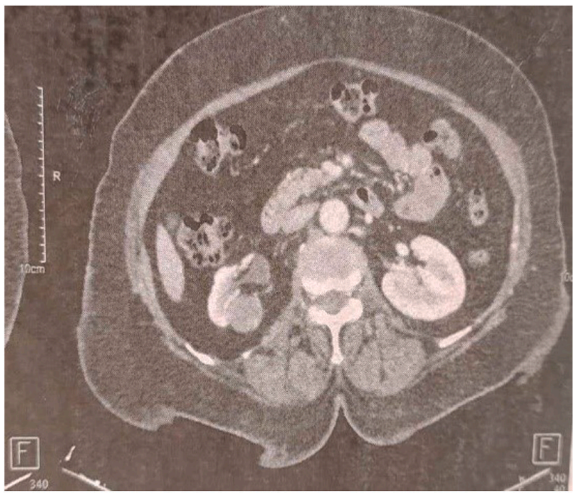

Fig. 1. Abdominal computed tomography (CT) showed a well-defined 24 mm right mediorenal cyst with an irregular wall that enhanced after the injection of contrast material, along with thick, irregular calcifications classified as Bosniak 3.

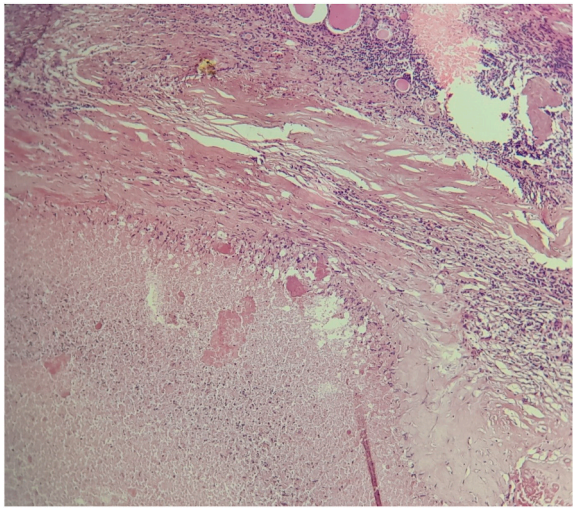

Fig. 2. Renal parenchyma with epithelioid granulomas centred by a caseous necrosis (Haematoxylin-Eosin x20).

active tuberculosis after a long latent period, and therefore patients usually present in the second to fourth decades of their lives.[3] Computed tomography (CT) is currently the preferred imaging method[2]. Urogenital tuberculosis rarely presents as pseudotumors, which are typically linked to a hypertrophied column of Bertin, renal dysmorphism, or an atypically shaped kidney.[4,5] Even less commonly, it may present as single or multiple parenchymal nodules without urinary tract involvement. This presentation, known as the pseudotumoral type, is characterized by well-defined parenchymal nodules of varying sizes visible on cross-sectional imaging.[5] These lesions may mimic a renal hydatid cyst or pseudotumoral xanthogranulomatous pyelonephritis. In extremely rare cases, genitourinary tuberculosis may also present as distinct parenchymal nodules of variable sizes, sparing the collecting system, a form also referred to as the pseudotumoral type. With the clinical and radiological findings suggestive of renal cell carcinoma, the patient consequently undergoes surgical removal of the involved kidney, whose histopathological examination unexpectedly establishes the diagnosis of tuberculosis.[2] The diagnosis is confirmed by the growth of *Mycobacterium tuberculosis* in urine or tissue cultures. Treatment for urogenital tuberculosis aligns with that of extrapulmonary tuberculosis at other sites. The standard initial regimen includes four drugs—isoniazid, rifampin, pyrazinamide, and ethambutol—for 2 months, followed by a continuation phase of two drugs, isoniazid and rifampin, for 4 months if the strain is susceptible to first-line therapy.

4. Conclusion

This case of renal tuberculosis presenting as a renal cystic tumor highlights the importance of a thorough and careful diagnostic approach. Renal tuberculosis should be included in the differential diagnosis of atypical renal lesions, particularly in patients with nonspecific symptoms. Prompt and appropriate treatment is vital to avoid complications and enhance patient outcomes. Finally, increasing awareness of this rare form of renal tuberculosis among clinicians is crucial for facilitating early diagnosis and effective management.

CRediT authorship contribution statement

Kays Chaker: Writing – original draft, Conceptualization. **Nader Gharbia:** Writing – original draft. **Alia Zehani:** Writing – original draft. **Boutheina Mosbahi:** Writing – original draft. **Samar Zribi:** Writing – original draft. **Yassine Nouira:** Writing – review & editing.

Declaration of Competing interests

The authors declare that there is no conflict of interests.

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