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Case Report

The Challenge of Urogenital Tuberculosis Diagnosis in Elderly Patients

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Abstract: Recurrent urinary tract infections (UTIs) in elderly patients with comorbidities can present diagnostic challenges. Extrapulmonary tuberculosis, particularly urogenital tuberculosis, is a rare but important cause of persistent genitourinary symptoms. We describe the case of an 83-year-old female with hypertension, diabetes, chronic kidney disease, and obesity who was repeatedly hospitalized for UTIs. In December 2023, she presented with progressive weakness, suprapubic pain, and altered urine despite prior antibiotic treatment. Imaging showed important bilateral pyelocalyceal dilation. She was diagnosed with urinary retention and remained catheterized. In February 2024, the patient was readmitted with multi-organ dysfunction, and *Mycobacterium tuberculosis* was eventually isolated from a urine culture. Despite being referred for treatment, the patient died. This case emphasizes: 1) the need to consider urogenital tuberculosis in elderly patients with recurrent UTIs, particularly in regions where tuberculosis is prevalent; 2) the importance of early diagnosis for appropriate and timely treatment, fundamental for a favorable outcome of a treatable disease. This case highlights the importance of implementing structured diagnostic protocols and educational initiatives to raise awareness of urogenital tuberculosis in elderly patients. Clinicians should prioritize early use of diagnostic tools like urine cultures for Mycobacterium tuberculosis and nucleic acid amplification tests, particularly in high-risk populations, to mitigate diagnostic delays and improve patient outcomes.

Keywords: Diagnosis; Extrapulmonary Tuberculosis; Elderly; Urinary Tract Infections; Urogenital Tuberculosis.

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1. Introduction

The number of tuberculosis cases in Portugal has been decreasing, from an incidence of 26 cases per 100,000 inhabitants in 2013 to 16 cases per 100,000 inhabitants in 2023, according to estimates from the World Health Organization [1]. Nevertheless, the country remains the Western European nation with the highest incidence rates of tuberculosis. According to the distribution of the most affected districts during 2016-2020, the highest incidence of tuberculosis cases was found in Penafiel (59.5 cases/100,000 inhabitants) and Marco de Canaveses (56.9 cases/100,000 inhabitants) in the Porto district [2]. Pulmonary tuberculosis is, by far, the most common form of the disease, and its clinical presentation is well-known and more straightforward to recognize. However, extrapulmonary tuberculosis is present in approximately 20% of all cases [3].

Urogenital tuberculosis encompasses infections of the urinary tract (kidneys, bladder, ureters) and, more commonly, the genital organs. The nonspecificity of its symptoms, the indolent and prolonged course of the infection, the lack of awareness for extrapulmonary tuberculosis, the rise of multidrug resistance, and the diagnostic challenges in older

people with unclear clinical pictures can lead to a delay in the diagnosis with severe and sometimes irreversible complications [4]. Particularly, the diagnostic pathway for tuberculosis has improved in recent years, especially with the dissemination of PCR based techniques. However, these new techniques have lower than desired performance in non-pulmonary tuberculosis and traditional techniques are still the gold standard. As such, considering the time needed for diagnosis with traditional techniques and, especially in high burden settings, there should be a low threshold to order appropriate cultures in elderly patients with recurrent UTI.

We present the case of a highly comorbid 83-year-old female patient with urinary tuberculosis.

2. Case Report

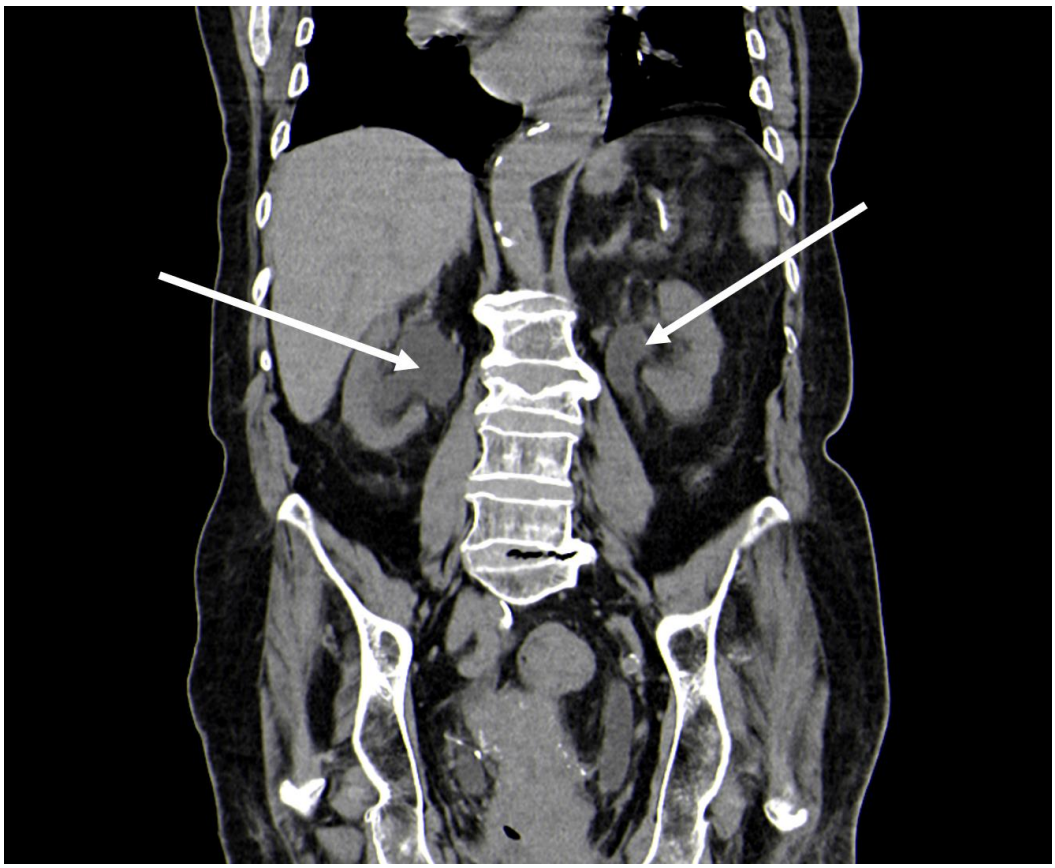
We present the case of an 83-year-old female patient, resident in Penafiel, with functional and cognitive impairment (Frailty score 7), and a medical history of hypertension, dyslipidemia, insulin-treated type 2 diabetes mellitus, and class 2 obesity (BMI 38 kg/m^2), with significant organ impairment, including valvular heart disease and chronic kidney disease (CKD) stage 3bA2. Additionally, there was also a history of degenerative joint disease, cataracts, and chronic venous insufficiency.

Since 2022, she presented recurrent urinary tract infections (UTIs). The first time she was hospitalized was in June 2022, when she was admitted to the emergency department due to hyperglycemia. Clinically, she was hemodynamically stable, afebrile, and eupneic, with no need for supplemental oxygen. Laboratory findings highlighted elevated systemic inflammatory markers (Leukocytes 12.00 x10^3 µL with 68,2% neutrophil and C-reactive protein 32,2 mg/L) and worsening renal function (serum urea/creatinine 162/2.41 mg/dL). Urinalysis revealed significant leukocyturia (>205/hpf) without documented clinical signs of urinary tract infection. The patient was diagnosed with a UTI associated with acute kidney injury (AKIN stage 1) on the background of probable prerenal/renal etiology. She was treated with 5 days of ceftriaxone targeted to the isolated multidrug-sensitive Escherichia coli strain, with favorable clinical and analytical progression. At discharge, the patient was asymptomatic.

She attended multiple times on to outpatient consultations with her family doctor and received multiple courses of antibiotics for UTI, with no satisfactory response. A worsening of renal function (serum creatinine 3.2 mg/dL) was documented in November 2023, and an abdominal-pelvic CT scan (Figure 1) revealed bilateral pyelocaliceal dilatation with ectasia of the ureters along their course to the bladder, along with thickened, trabeculated bladder walls and diverticula, as well as a right-sided ureterocele measuring 14 mm. As a result, the patient was catheterized. In November 2023, she was eventually referred to the emergency department.

Upon examination in the emergency department, the patient was found to be catheterized with purulent urine, afebrile, and had a tender abdomen without guarding. Laboratory findings showed elevated inflammatory markers (Leukocytes 17.10 x103 µL with 85,2% neutrophil and C-reactive protein 143 mg/L) and a serum creatinine level of 3.35 mg/dL. Urinalysis revealed significant leukocyturia (>205/hpf). A renal-vesical ultrasound showed persistent bilateral ureterohydronephrosis, with renal pelvis diameters measuring 16 mm on the left and 27 mm on the right. No obstruction site was identified, and no signs of lithiasis or cysts bilaterally. The bladder was minimally distended, with the catheter balloon inside. There was a multidisciplinary meeting, involving Urology, which confirmed a probable vesicoureteral reflux due to urinary retention, thus indicating the need for long-term catheterization. No pathogen was isolated during this hospitalization. The patient was discharged chronically catheterized after completing a 7-day course of empirical antibiotics.

Figure 1. November 2023: Contrast-enhanced abdominal-pelvic CT scan demonstrating bilateral dilation of the pyelocalyceal system and ureters throughout their entire extent, as indicated by the arrows. These findings are consistent with the clinical presentation and progressive renal dysfunction.



In February 2024, the patient was readmitted with genitourinary symptoms and associated multi-organ dysfunction (renal, neurological, and cardiovascular). The urine culture revealed the isolation of Klebsiella pneumoniae (ESBL). Abdominal-pelvic CT (Figure 2) showed moderate bilateral pyelocaliceal dilatation and ureteral ectasia throughout their length without defining an obstruction. No renal stones were noted. The bladder collapsed over the catheter balloon. Mild thickening of the perirenal, peri-ureteral, and perivesical fat planes was observed, consistent with a probable infection.

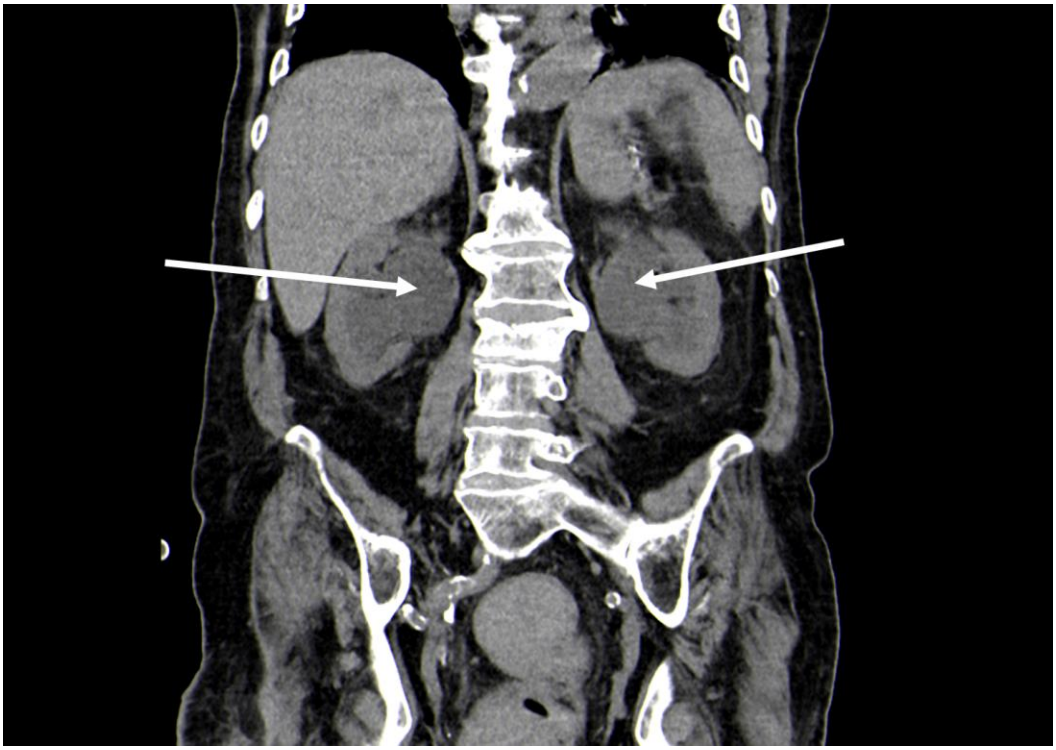
During hospitalization, the patient experienced isolated fever spikes on multiple days without focal symptoms or clinical or analytical repercussions. The diagnostic workup was expanded, including tests for and urine acid-fast bacilli (BAAR) (negative). The patient was ultimately discharged afebrile, with a sustained decrease in inflammatory markers. A mycobacterial urine culture was ongoing, and a Mycobacterium tuberculosis complex strain (known result on 5th March) was isolated, which was multidrug-sensitive. On the knowledge of the result, she was referred for antituberculous treatment but unfortunately passed away on 11th March 2024.

3. Discussion and conclusions

This case highlights the complexity of managing elderly patients with recurrent urinary tract infections (UTIs) and multifactorial renal dysfunction. The hallmarks of urinary tuberculosis are the persistence of urinary symptoms despite repeated antibiotic therapy, the absence of bacteria in purulent urine (sterile pyuria) and the marked thickening of the urologic tract, all present in this clinical case. However, these hallmarks can be easily

missed in an elderly comorbid patient if there is insufficient awareness of the diagnosis and if there are concomitant confounders (for example, bacteria growth in urine).

Figure 2. February 2024: Follow-up contrast-enhanced abdominal-pelvic CT scan showing progression to pronounced bilateral ureterohydronephrosis with severe dilation of the pyelocalyceal systems and marked ectasia of the ureters (arrows). These changes reflect worsening urinary stasis, correlating with the patient's clinical deterioration.



This case underscores the necessity of a comprehensive diagnostic approach and heightened clinical suspicion of tuberculosis as a possible etiology, particularly in regions with high endemicity. The time required for positive culture delays confirmed diagnosis and treatment, contributing to unfavorable outcomes. The initial signs of urogenital tuberculosis, such as storage symptoms, dysuria, hematuria, cloudy urine, fever, back pain, and occasionally elevated blood pressure, often mimic more common conditions like uncomplicated UTIs or pyelonephritis. This symptom overlap, combined with the insidious progression of the disease, frequently results in diagnostic delays.

The diagnosis of tuberculosis is established based on a thorough medical history, clinical signs, imaging studies, and the identification of Mycobacterium tuberculosis in clinical samples [3]. Nevertheless, this case highlights critical challenges in clinical practice, such as the non-specific nature of symptoms, the slow progression of urogenital tuberculosis, a lack of awareness among healthcare providers, and suboptimal healthcare-seeking behavior by patients. As a result, tuberculosis is often only diagnosed after severe urogenital lesions have developed. Such delays in diagnosis and treatment can lead to irreversible damage to the urinary system and systemic complications. This case emphasizes the importance of maintaining a high index of suspicion for tuberculosis in patients with persistent urinary symptoms, particularly in high-risk populations.

Finally, this case underscores the critical need for enhanced educational initiatives and structured diagnostic pathways to improve the recognition of urogenital tuberculosis among clinicians. Genitourinary tuberculosis represents a diagnostic challenge requiring heightened clinical awareness and adherence to evidence-based protocols to optimize patient outcomes; clinicians should prioritize screening in high-risk populations , such as

those with a history of pulmonary tuberculosis, immunosuppression, or recurrent urinary tract infections without identifiable bacterial etiology, and incorporate advanced diagnostic methods like urine cultures for Mycobacterium tuberculosis and nucleic acid amplification tests (NAATs) [5]. Advances in diagnostic techniques, such as rapid molecular assays and high-resolution imaging modalities, could be pivotal in addressing diagnostic delays [6]. Additionally, fostering multidisciplinary collaboration among urologists, nephrologists, and infectious disease specialists alongside targeted educational initiatives for healthcare providers is imperative to strengthen diagnostic accuracy, reduce delays, and ensure adherence to treatment protocols. By adopting these measures, healthcare systems will not only enhance early detection but also ensure a more comprehensive and effective management of this often-overlooked manifestation of tuberculosis, ultimately contributing to better health outcomes and reduced disease burden [7].

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References

1. World Health Organization. Global tuberculosis report 2022. Geneva: World Health Organization; 2022. Available from: https://www.who.int/teams/global-tuberculosis-programme/tb-reports.
2. Direção-Geral da Saúde. Manual de tuberculose e micobactérias não tuberculosas: recomendações 2020. Lisboa: Direção-Geral da Saúde; 2020. ISBN: 978-972-675-308-7. Available from: https://www.dgs.pt.
3. Roddy K, Tobin EH, Leslie SW, Rathish B. Genitourinary tuberculosis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 [cited 2024 Aug 16]. Available from: https://www.ncbi.nlm.nih.gov/pubmed/32491490.
4. Abbara A, Davidson RN, Medscape. Etiology and management of genitourinary tuberculosis. Nat Rev Urol. 2011;8(12):678–88. doi:10.1038/nrurol.2011.172.
5. Altez-Fernandez C, Ortiz V, Mirzazadeh M, et al. Diagnostic accuracy of nucleic acid amplification tests (NAATs) in urine for genitourinary tuberculosis: a systematic review and meta-analysis. BMC Infect Dis. 2017;17(1):390. doi:10.1186/s12879-017-2476-8.
6. Eddabra R, Ait Benhassou H. Rapid molecular assays for detection of tuberculosis. Pneumonia. 2018;10(1):4. doi:10.1186/s41479-018-0049-2.
7. Nandlal L, Perumal R, Naidoo K. Rapid molecular assays for the diagnosis of drug-resistant tuberculosis. Infect Drug Resist. 2022;10. doi:10.2147/IDR.S381643.