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Prostatic Tuberculosis Mimicking Clinically Significant Prostate Cancer in a Patient Presenting With Low Ejaculate Volume: A Case Report

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Abstract

Prostatic tuberculosis is a rare manifestation of genitourinary tuberculosis and may closely mimic clinically significant prostate cancer on multiparametric MRI, creating considerable diagnostic uncertainty. We report the case of a 46-year-old Nigerian man undergoing follow-up for latent tuberculosis infection who reported a progressive reduction in ejaculatory volume while attempting conception.

He had minimal lower urinary tract symptoms (International Prostate Symptom Score: 1/35), a prostate-specific antigen level of 3.94 µg/L, and a palpable prostatic nodule on digital rectal examination.

Multiparametric MRI demonstrated highly suspicious lesions involving both the peripheral and transition zones, together with pelvic lymphadenopathy, raising concern for clinically significant prostate cancer. Histopathological examination revealed extensive granulomatous inflammation with areas of necrosis, while Ziehl-Neelsen and fungal stains were negative. PCR testing performed on the biopsy tissue subsequently confirmed *Mycobacterium tuberculosis* complex, without evidence of isoniazid or rifampicin resistance. The patient completed anti-tuberculous therapy, with radiological resolution of the lesions and normalisation of prostate-specific antigen levels, although persistent ejaculatory dysfunction required specialist fertility assessment.

This case highlights the ability of prostatic tuberculosis to fulfil radiological criteria typically associated with prostate malignancy despite minimal urinary symptoms. Recognition of this rare entity is important to avoid misdiagnosis, prevent inappropriate oncological management, and facilitate the timely initiation of anti-tuberculous treatment.

Categories: Urology, Radiology, Infectious Disease

Keywords: diffusion restriction, genitourinary tuberculosis, granulomatous prostatitis, pelvic lymphadenopathy, prostate cancer mimic, prostate lesions, prostate tuberculosis

Introduction

Tuberculosis remains a major global health concern, with a substantial proportion of cases occurring in individuals originating from high-prevalence regions [1]. Extrapulmonary tuberculosis accounts for approximately 15%-20% of all tuberculosis cases and may involve almost any organ system, including the genitourinary tract. Genitourinary tuberculosis is among the most common forms of extrapulmonary disease; however, isolated prostatic involvement remains uncommon and is frequently under-recognised [2].

Prostatic tuberculosis is thought to arise predominantly through haematogenous dissemination of *Mycobacterium tuberculosis* from a primary focus of infection, although direct extension from adjacent genitourinary structures and descending spread through the urinary tract have also been described. Clinical manifestations are highly variable and may include lower urinary tract symptoms, pelvic pain, haematuria, haematospermia, infertility, or asymptomatic disease detected incidentally during investigations for unrelated conditions.

Diagnosis can be challenging because both clinical and radiological findings often overlap with those of prostate cancer [3]. Multiparametric MRI may demonstrate low T2 signal intensity, diffusion restriction, and associated pelvic lymphadenopathy, features that frequently prompt investigation for malignant disease [4]. Histopathological confirmation is therefore frequently required, and molecular diagnostic techniques such as PCR have become increasingly important when conventional microbiological investigations are negative.

We present a case of PCR-confirmed prostatic tuberculosis in a patient with minimal lower urinary tract symptoms who presented with a progressive reduction in ejaculatory volume while attempting conception.

How to cite this article

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Multiparametric MRI demonstrated highly suspicious prostatic lesions and pelvic lymphadenopathy, creating a strong radiological impression of prostate malignancy. This case highlights the diagnostic challenges posed by prostatic tuberculosis and illustrates the potential reproductive consequences of this uncommon condition.

Case Presentation

A 46-year-old Nigerian man was referred to respiratory services following occupational health screening, which identified latent tuberculosis infection. He reported no respiratory symptoms, including cough, haemoptysis, fever, night sweats, or weight loss. A chest radiograph demonstrated left upper lobe shadowing, prompting further investigation with contrast-enhanced CT of the thorax (Figures 1-2). CT demonstrated bilateral apical calcified granulomas with focal tree-in-bud nodularity and subtle ground-glass opacities, findings considered consistent with previous pulmonary tuberculosis. Bronchoalveolar lavage showed no evidence of active infection, and the patient was treated for latent tuberculosis with a three-month course of rifampicin.

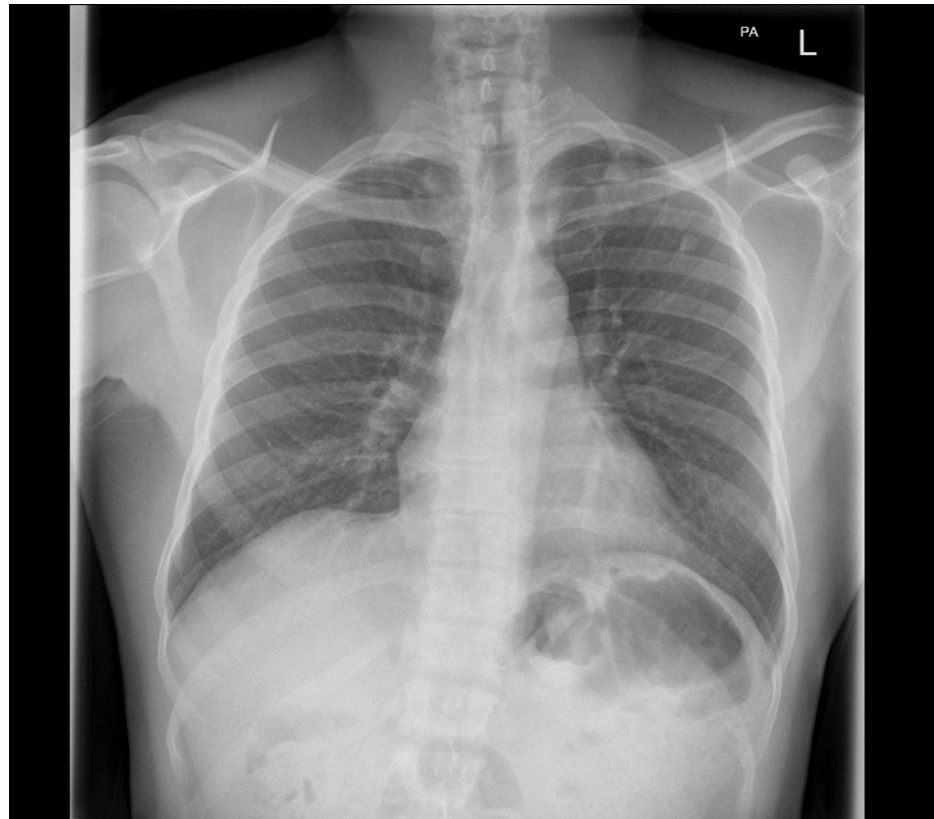


FIGURE 1: Chest radiograph demonstrating findings suggestive of prior pulmonary tuberculosis.

Posteroanterior chest radiograph demonstrating left upper lobe/apical shadowing, with a small focal opacity projecting over the left second anterior intercostal space. The upper-zone distribution raised suspicion of prior pulmonary tuberculosis and prompted further evaluation with CT of the thorax.

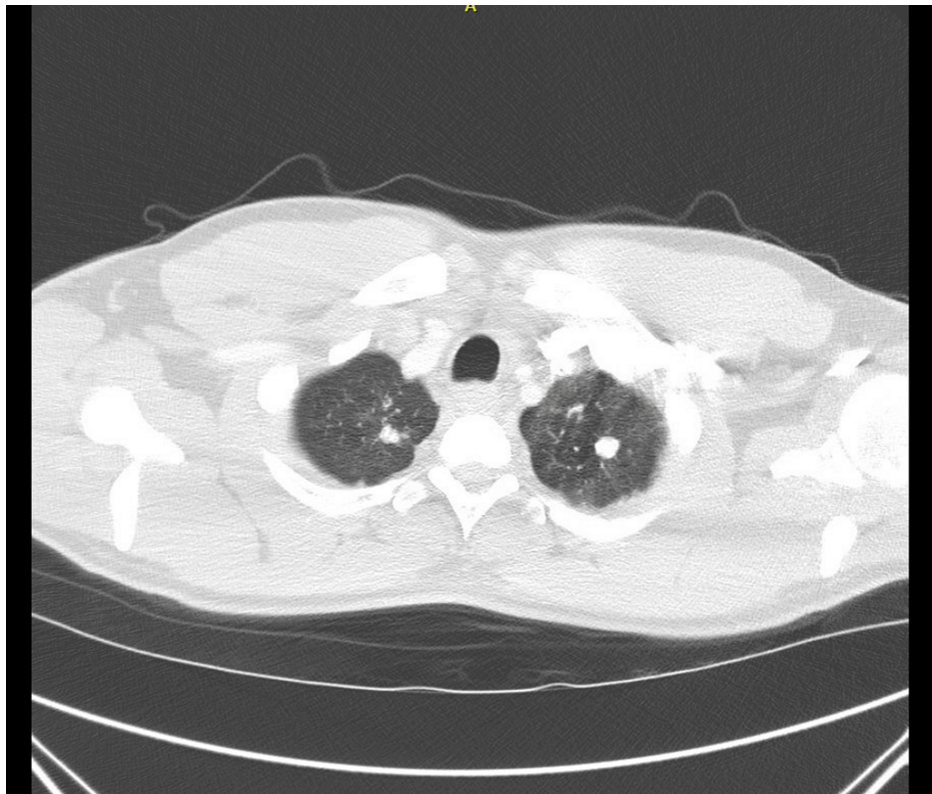


FIGURE 2: Contrast-enhanced CT of the thorax demonstrating findings suggestive of prior pulmonary tuberculosis.

Axial contrast-enhanced CT image demonstrating bilateral apical calcified granulomas, with focal tree-in-bud nodularity and subtle ground-glass opacities. These findings were considered suggestive of prior pulmonary tuberculosis.

During respiratory follow-up, the patient reported an approximately 18-month history of progressively reduced ejaculatory volume and difficulty conceiving a second child. He was subsequently referred for urological assessment. He denied erectile dysfunction and reported minimal lower urinary tract symptoms, with an International Prostate Symptom Score (IPSS) of 1/35. Digital rectal examination demonstrated a palpable prostatic nodule. The serum prostate-specific antigen (PSA) level was 3.94 µg/L.

Multiparametric MRI of the prostate demonstrated two highly suspicious lesions involving the posterior peripheral zone and anterior transition zone, both classified as Likert 5 lesions, together with enlarged iliac, mesorectal, and superior rectal lymph nodes (Figures 3-5). The MRI-derived prostate volume was 31 mL. These findings raised strong suspicion for clinically significant prostate cancer, and a transperineal prostate biopsy was subsequently performed.

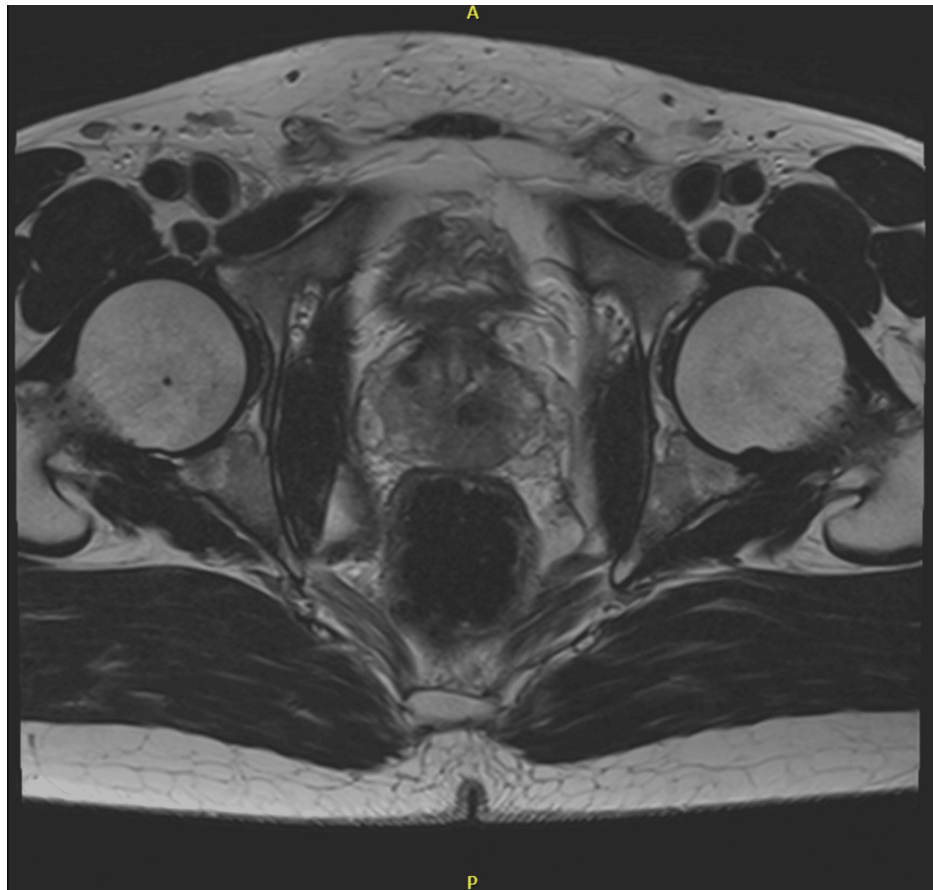


FIGURE 3: Axial T2-weighted MRI of the prostate.

Axial T2-weighted MRI demonstrating diffuse low T2 signal intensity throughout the prostate gland, with loss of normal zonal differentiation and no discrete dominant mass. The diffuse infiltrative appearance is atypical for conventional prostate adenocarcinoma and corresponded to extensive granulomatous inflammation secondary to prostatic tuberculosis.

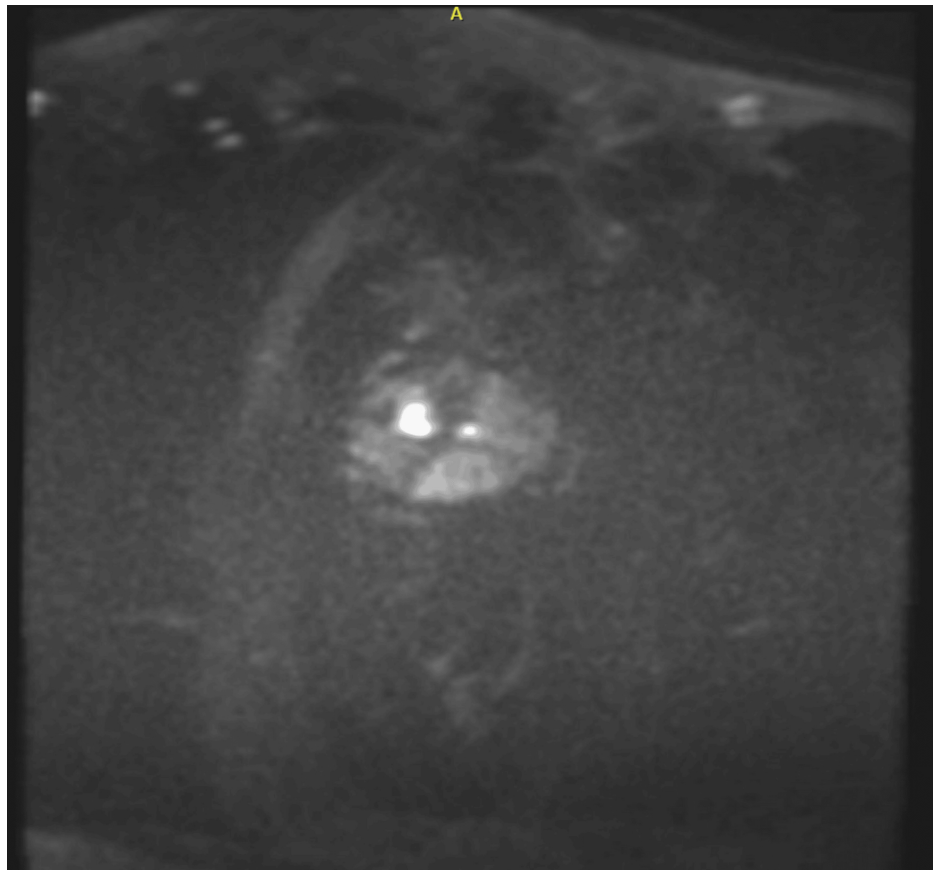


FIGURE 4: Diffusion-weighted MRI of the prostate.

High-b-value diffusion-weighted MRI demonstrating multiple areas of increased signal intensity within the prostate, suggestive of restricted diffusion. In conjunction with pelvic lymphadenopathy, these findings raised significant concern for clinically significant prostate cancer and resulted in a radiological impression of highly suspicious disease.

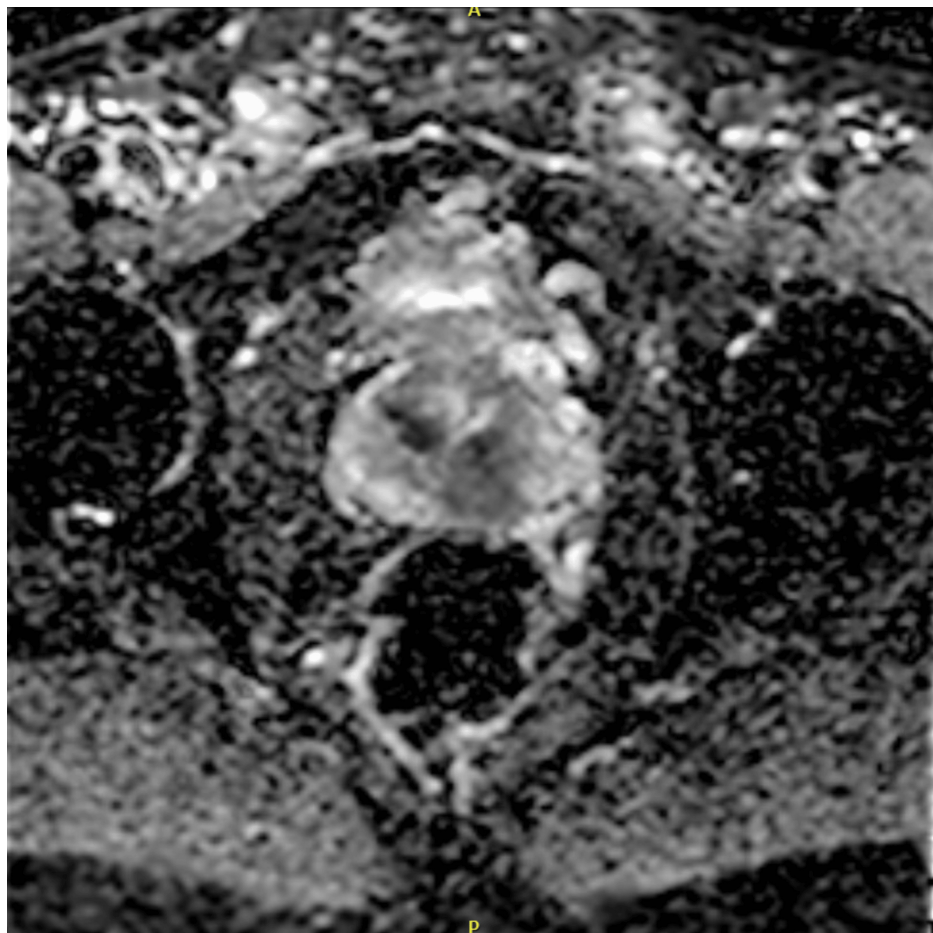


FIGURE 5: Apparent diffusion coefficient map of the prostate.

Corresponding apparent diffusion coefficient map demonstrating low signal intensity in the same regions identified on diffusion-weighted imaging, confirming restricted diffusion. This imaging pattern is commonly associated with highly cellular malignancies but may also occur in granulomatous inflammatory conditions such as tuberculosis.

Histopathological examination demonstrated extensive granulomatous inflammation involving multiple biopsy cores, with several foci showing central necrosis. No evidence of adenocarcinoma or high-grade prostatic intraepithelial neoplasia was identified. Ziehl-Neelsen staining for acid-fast bacilli and periodic acid-Schiff with diastase (PAS-D) staining for fungal organisms were negative. PCR testing performed on the biopsy tissue subsequently detected *Mycobacterium tuberculosis* complex DNA, confirming the diagnosis of prostatic tuberculosis. Molecular resistance testing demonstrated no mutations associated with rifampicin or isoniazid resistance. The patient was commenced on standard antituberculous therapy consisting of rifampicin, isoniazid, pyrazinamide, and ethambutol for two months, followed by rifampicin and isoniazid for a further four months.

The case was reviewed through the local tuberculosis multidisciplinary pathway. Following completion of antituberculous therapy, a follow-up MRI demonstrated near-complete resolution of the previously identified prostatic lesions, and the PSA level normalised to 1.3 µg/L. Despite successful treatment of the infection, the patient continued to experience markedly reduced ejaculatory volume and was referred to a tertiary fertility service for further assessment. At follow-up, he reported that conception had not yet been achieved. Retrograde ejaculation was considered, particularly because he described cloudy urine following ejaculation, and further fertility investigations were planned through the tertiary service.

Discussion

Genitourinary tuberculosis is a recognised manifestation of extrapulmonary tuberculosis and remains one of the most common forms of extrapulmonary disease worldwide. Prostatic involvement, however, is uncommon and may be under-recognised because clinical presentations are highly variable and often non-specific [5,6]. Infection is thought to occur predominantly through haematogenous dissemination of *Mycobacterium tuberculosis* from a primary focus of infection, although direct extension from adjacent genitourinary structures and descending spread through the urinary tract have also been described.

Clinical manifestations of prostatic tuberculosis are highly variable and may range from asymptomatic disease to lower urinary tract symptoms, pelvic pain, haematuria, haemospermia, infertility, and abnormal findings on digital rectal examination. The present case was notable because the patient's principal complaint was a progressive reduction in ejaculatory volume and difficulty conceiving despite minimal lower urinary tract symptoms (IPSS: 1/35). Although infertility and ejaculatory dysfunction have been reported in genitourinary tuberculosis, they remain relatively uncommon presenting features and may delay recognition of the underlying diagnosis.

One of the most important learning points from this case is the significant radiological overlap between prostatic tuberculosis and clinically significant prostate cancer. Reported imaging findings of prostatic tuberculosis include low T2 signal intensity, restricted diffusion, and associated pelvic lymphadenopathy, all of which may raise concern for malignancy, particularly when lesions receive high-suspicion classifications under Prostate Imaging Reporting and Data System version 2.1 (PI-RADS v2.1) [4,7]. In the present case, multiparametric MRI demonstrated two Likert 5 lesions involving both the peripheral and transition zones, together with pelvic lymphadenopathy, findings that would ordinarily raise strong suspicion for clinically significant prostate cancer. Restricted diffusion, low T2 signal intensity, and nodal enlargement are commonly associated with malignancy due to increased cellular density but may also occur in granulomatous inflammatory conditions such as tuberculosis, contributing to the significant radiological overlap between these entities [8,9].

The differential diagnosis of diffuse prostate MRI abnormalities includes prostate adenocarcinoma, granulomatous prostatitis, fungal infection, sarcoidosis, and other inflammatory disorders [4]. Although multiparametric MRI is invaluable for lesion detection and risk stratification, imaging findings alone may not reliably distinguish among these entities. Histopathological confirmation therefore remains essential when radiological appearances are suspicious for malignancy.

Histological examination demonstrated extensive granulomatous inflammation with areas of necrosis, findings that may be highly suggestive of tuberculosis in the appropriate clinical context. Notably, Ziehl-Neelsen staining for acid-fast bacilli was negative. This illustrates an important diagnostic challenge because conventional staining techniques may lack sensitivity, particularly in paucibacillary disease. In contrast, PCR testing performed on the biopsy tissue successfully detected *Mycobacterium tuberculosis* complex DNA and established the diagnosis. Molecular diagnostic techniques are therefore increasingly valuable when histological suspicion exists despite negative microbiological staining [3,8].

This case also highlights the potential reproductive consequences of prostatic tuberculosis. Although the prostatic infection was treated and the radiological abnormalities showed near-complete resolution following antituberculous therapy, the patient continued to experience markedly reduced ejaculatory volume and remained under specialist fertility assessment. Tuberculosis-related inflammation may result in fibrosis, ductal obstruction, or functional disruption of the male reproductive tract, potentially contributing to persistent ejaculatory dysfunction and subfertility. Although a direct causal relationship cannot be definitively established in this case, the temporal association between biopsy-proven prostatic tuberculosis and a progressive reduction in ejaculatory volume raises the possibility that prostatic involvement contributed to the patient's fertility concerns. Clinicians should therefore be aware that successful microbiological treatment may not necessarily result in complete recovery of reproductive function.

The present case demonstrates how prostatic tuberculosis can closely mimic clinically significant prostate cancer on multiparametric MRI, including the presence of highly suspicious lesions and pelvic lymphadenopathy. In patients from tuberculosis-endemic regions or those with epidemiological risk factors, tuberculosis should remain an important differential diagnosis when radiological findings appear discordant with the overall clinical picture [1,2]. Prompt tissue diagnosis with histopathological and molecular confirmation is essential to avoid misdiagnosis, prevent inappropriate oncological intervention, and facilitate the timely initiation of antituberculous therapy.

Conclusions

Prostatic tuberculosis is a rare manifestation of genitourinary tuberculosis that may closely mimic clinically significant prostate cancer on multiparametric MRI. Restricted diffusion, low T2 signal intensity, pelvic lymphadenopathy, and suspicious lesion morphology are not specific to malignancy and should be interpreted within the broader clinical context. Histopathological examination and molecular diagnostic techniques, including PCR, remain essential for establishing an accurate diagnosis when imaging findings are concerning for cancer. This case also highlights the potential reproductive consequences of prostatic tuberculosis, as ejaculatory dysfunction and fertility concerns may persist despite successful antituberculous treatment. Awareness of this uncommon entity may help prevent misdiagnosis, avoid inappropriate oncological management, and facilitate the timely initiation of antituberculous therapy. Clinicians should maintain a high index of suspicion for tuberculosis in patients from endemic regions or with relevant risk factors who present with atypical prostate imaging findings.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Momin Masued, Muhammad Anwar

Acquisition, analysis, or interpretation of data: Momin Masued, Muhammad Anwar, Mary Jenkinson, Andrew Hare

Drafting of the manuscript: Momin Masued

Critical review of the manuscript for important intellectual content: Momin Masued, Muhammad Anwar, Mary Jenkinson, Andrew Hare

Supervision: Momin Masued

Disclosures

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References

1. Global tuberculosis report 2025. (2025). Accessed: May 7, 2026: <https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2025>.
2. Sharma SK, Mohan A, Kohli M: Extrapulmonary tuberculosis. *Expert Rev Respir Med*. 2021, 15:931-948. [10.1080/17476348.2021.1927718](https://doi.org/10.1080/17476348.2021.1927718)
3. Cheng Y, Huang L, Zhang X, Ji Q, Shen W: Multiparametric magnetic resonance imaging characteristics of prostate tuberculosis. *Korean J Radiol*. 2015, 16:846-852. [10.3348/kjr.2015.16.4.846](https://doi.org/10.3348/kjr.2015.16.4.846)
4. Kulchavenya E, Brizhatyuk E, Khomyakov V: Diagnosis and therapy for prostate tuberculosis. *Ther Adv Urol*. 2014, 6:129-134. [10.1177/1756287214529005](https://doi.org/10.1177/1756287214529005)
5. Mishra KG, Ahmad A, Singh G, Tiwari R: Tuberculosis of the prostate gland masquerading prostate cancer; five cases experience at IGIMS. *Urol Ann*. 2019, 11:389-392. [10.4103/UA.UA_119_18](https://doi.org/10.4103/UA.UA_119_18)
6. William Y, Sugiono M, Diana Prasetyo P, Erico A, Octavius GS: A case report and literature review of prostatic tuberculosis masquerading as prostate cancer: a diagnostic challenge in a tuberculosis-endemic region. *Trop Med Infect Dis*. 2025, 10:145. [10.3390/tropicalmed10050145](https://doi.org/10.3390/tropicalmed10050145)
7. Turkbey B, Rosenkrantz AB, Haider MA, et al.: Prostate Imaging Reporting and Data System version 2.1: 2019 update of Prostate Imaging Reporting and Data. *Eur Urol*. 2019, 76:340-351. [10.1016/j.eururo.2019.02.033](https://doi.org/10.1016/j.eururo.2019.02.033)
8. Mehta PK, Raj A, Singh N, Khuller GK: Diagnosis of extrapulmonary tuberculosis by PCR. *FEMS Immunol Med Microbiol*. 2012, 66:20-36. [10.1111/j.1574-695X.2012.00987.x](https://doi.org/10.1111/j.1574-695X.2012.00987.x)
9. Żurowska A, Pęksa R, Bienkowski M, et al.: Prostate cancer and its mimics: a pictorial review. *Cancers (Basel)*. 2023, 15:3682. [10.3390/cancers15143682](https://doi.org/10.3390/cancers15143682)