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Case Report

Incidental detection of high-grade T cell non-Hodgkin lymphoma mimicking urinary bladder carcinoma: a diagnostic challenge

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ABSTRACT

Non-Hodgkin lymphoma (NHL) is a heterogeneous group of lymphoid malignancies that can occasionally present with atypical clinical and radiological features, leading to significant diagnostic challenges. Incidental detection during evaluation for other suspected malignancies is uncommon. We report the case of a 65-year-old male who presented with radiological findings suggestive of a urinary bladder neoplasm with metastatic lymphadenopathy. The patient underwent cystoscopy with transurethral resection of bladder tumor (TURBT) and bilateral double-J (DJ) stenting. Histopathological examination of the bladder tissue revealed only chronic inflammatory changes consistent with cystitis, with no evidence of malignancy. Owing to persistent generalized lymphadenopathy, a biopsy of the right iliac lymph node was subsequently performed. Histopathological examination demonstrated features of a malignant lymphoid neoplasm, and immunohistochemistry confirmed a diagnosis of high-grade mature T-cell NHL, with tumor cells positive for CD3, CD4, CD5, and CD7 and a high proliferative index (Ki-67: 90-95%). PET-CT further supported the diagnosis by demonstrating widespread metabolically active lymphadenopathy consistent with a lymphoproliferative disorder. This case highlights an unusual presentation of high-grade T-cell NHL mimicking urinary bladder carcinoma with nodal metastasis and emphasizes the critical role of histopathological examination and immunohistochemistry in establishing the correct diagnosis when clinical and radiological findings are discordant. Early recognition of such atypical presentations is essential to avoid misdiagnosis, facilitate timely initiation of appropriate therapy, and improve patient outcomes.

Keywords: Non-Hodgkin lymphoma; T-cell lymphoma, Urinary bladder carcinoma, Chronic cystitis, Lymphadenopathy, Immunohistochemistry, PET-CT, Case report

INTRODUCTION

Non-Hodgkin lymphoma (NHL) comprises a broad and heterogeneous group of lymphoid neoplasms arising from B-cells, T-cells, or natural killer (NK) cells and represents one of the most common hematological malignancies worldwide, with a wide spectrum of clinical behavior ranging from indolent to highly aggressive forms.[1,2] The disease most commonly presents with painless peripheral lymphadenopathy; however, extranodal involvement is seen in a significant proportion of cases and may involve sites such as the gastrointestinal tract, skin, central nervous system, and bone marrow.[3] Among these, involvement of the genitourinary system, particularly the urinary bladder, is exceedingly rare and often leads to diagnostic confusion.[4]

Urinary bladder involvement in NHL may occur as a primary extranodal lymphoma or, more commonly, as part of systemic disease.[5] Due to its rarity, there is limited clinical suspicion for lymphoma when evaluating bladder lesions. Patients may present with nonspecific urinary symptoms such as hematuria, dysuria, frequency, or may even remain asymptomatic, with lesions detected

incidentally on imaging studies.[6] Radiologically, bladder involvement by lymphoma often manifests as focal or diffuse bladder wall thickening, which closely mimics more common conditions such as urinary bladder carcinoma.[7] The presence of regional or distant lymphadenopathy further strengthens the suspicion of metastatic carcinoma, thereby potentially leading to an initial misdiagnosis.[8]

In contrast, cystitis is a frequently encountered clinical condition characterized by inflammation of the urinary bladder. It is most commonly caused by bacterial infections but may also result from chronic irritation, catheterization, calculi, radiation, or autoimmune conditions.[9] Chronic cystitis, in particular, can produce persistent bladder wall thickening, mucosal irregularity, and inflammatory changes that may be indistinguishable from neoplastic processes on imaging modalities such as ultrasound, CT scan, or PET-CT.[10] Furthermore, inflammatory conditions may also be associated with reactive lymphadenopathy, adding to the diagnostic complexity.[11]

Advanced imaging techniques, especially positron emission tomography-computed tomography (PET-CT), play a crucial role in identifying metabolically active lesions and assessing the extent of disease. However, increased metabolic activity is not specific for malignancy and may also be observed in inflammatory and infectious conditions.[12] Therefore, reliance solely on imaging findings can be misleading in differentiating between carcinoma, inflammatory lesions like cystitis, and lymphoproliferative disorders such as NHL.

Definitive diagnosis in such challenging cases relies on histopathological examination of tissue specimens. While TURBT or bladder biopsy may reveal only inflammatory changes consistent with cystitis, evaluation of enlarged lymph nodes through biopsy is essential when clinical suspicion persists.[13] Immunohistochemistry further aids in confirming the diagnosis and subclassifying NHL, which is critical for determining prognosis and guiding therapy.[14]

In this context, we present a rare and diagnostically challenging case of a patient with radiological findings suggestive of urinary bladder carcinoma with nodal metastasis, where bladder biopsy revealed chronic cystitis, but subsequent lymph node biopsy established the diagnosis of high-grade T-cell NHL.

This case highlights the importance of correlating clinical, radiological, and pathological findings and emphasizes the need for thorough evaluation to avoid misdiagnosis and ensure appropriate patient management.

CASE REPORT

A 65-year-old male, Girishbhai Vora, a clerk by profession and resident of Gandhinagar, presented to the surgical department of GMERS Medical College and Civil Hospital, Gandhinagar, with a prior contrast-enhanced CT scan of the abdomen and pelvis. The imaging study revealed irregular urinary bladder wall thickening with features suspicious for a neoplastic etiology, along with multiple enlarged lymph nodes suggestive of metastatic lymphadenopathy.

The patient reported vague lower urinary tract symptoms, including occasional urinary frequency and mild dysuria over the past few weeks. There was no significant history of gross hematuria, fever, weight loss, or loss of appetite. There was no prior history of malignancy, tuberculosis, or chronic systemic illness. His past medical and surgical history was unremarkable, and there was no history of smoking or occupational exposure to known the carcinogens.

Given the radiological suspicion of urinary bladder carcinoma with possible nodal metastasis, the patient was admitted for further evaluation and management.

Hospital course and initial management

Based on the radiological findings and clinical suspicion, the surgical team planned diagnostic and therapeutic intervention. After completing all necessary pre-operative investigations and obtaining informed consent, the patient underwent cystoscopy with bilateral DJ stenting and TURBT on 01/01/2026.

The procedure was uneventful, and resected bladder tissue was sent for histopathological examination to confirm the diagnosis.

Radiological findings

Suspected case of carcinoma of urinary bladder, post TURBT with bilateral DJ stenting done till 31.12.25, biopsy suggest chronic inflammatory lesion, previous CT dated 30.12.25 shows urinary bladder mass lesion with multiple metastatic nodes, for further evaluation.

PET-CT reveals

Urinary bladder is adequately distended and shows irregular in homogenously enhancing thickening predominantly along right anterolateral and posterolateral wall of urinary bladder with mild peri-vesical fat stranding, showing increase metabolism.

Metabolically active enlarged and heterogeneously enhancing lower periesophageal, left gastric, celiac axis, periportal, portocaval, retrocaval, interaortocaval, pre-paraaortic, bilateral common iliac, bilateral external iliac, bilateral obturator nodes.

Thromboembolism in distal aspect of right main pulmonary artery and its inferior lower branch, without significant metabolism.

Patchy areas of increased metabolism in axial and appendicular skeletal sites most likely reactive, however MRI whole spine and pelvis suggested.

No other hypermetabolic malignant lesions elsewhere in the body.

These PETCT features have following differentials- Malignant lesion from urinary bladder with nodal metastasis, lymphoproliferativedisorder, infective (granulomatous etiology) unlikely.

Biopsy from right external iliac nodal mass will be further helpful.

Gross examination

Received multiple irregular, soft to firm, greyish-white to greyish-brown tissue fragments labelled as TURBT. The tissue fragments are friable in consistency and together measure approximately 0.5×0.5 cm in aggregate.

All tissue fragments were entirely processed and submitted for histopathological examination as follows: Section A: Multiple tissue bits, section B: Multiple tissue bits and section C: Multiple tissue bits.

Microscopic examination

Microscopic exam of transurethral resection specimen revealed multiple tissue fragments lined by intact transitional epithelium (urothelium). Underlying lamina propria demonstrated mild to moderate infiltration by inflammatory cells, predominantly lymphocytes, suggestive of chronic inflammatory process. Areas of mild vascular congestion also noted. There was no evidence of cellular atypia, dysplasia/malignant infiltration in examined sections. No tumor cells identified.

Overall, these histopathological findings are consistent with a chronic inflammatory lesion of the urinary bladder, indicative of cystitis (mild chronic cystitis), with no evidence of malignancy in the submitted specimen.

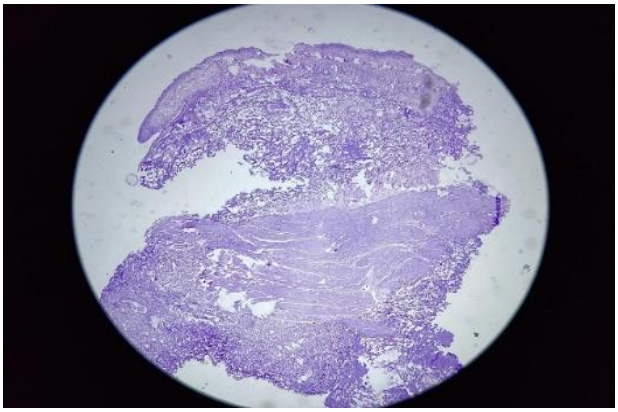

Figure 1: 40× H and E section from the TURBT (urinary bladder) specimen.

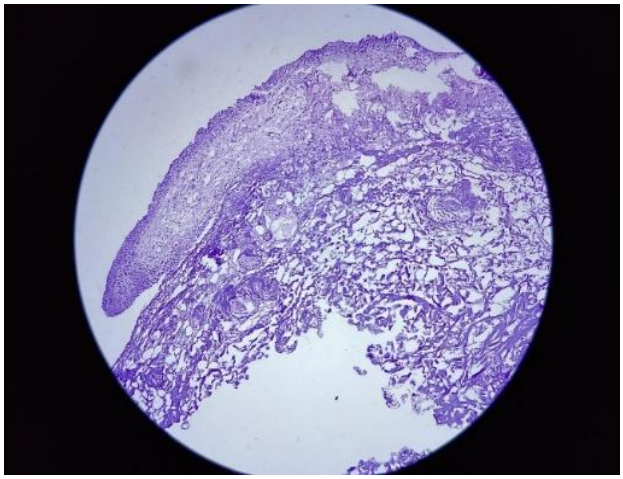

Figure 2: 40× H and E section from the TURBT (urinary bladder) specimen.

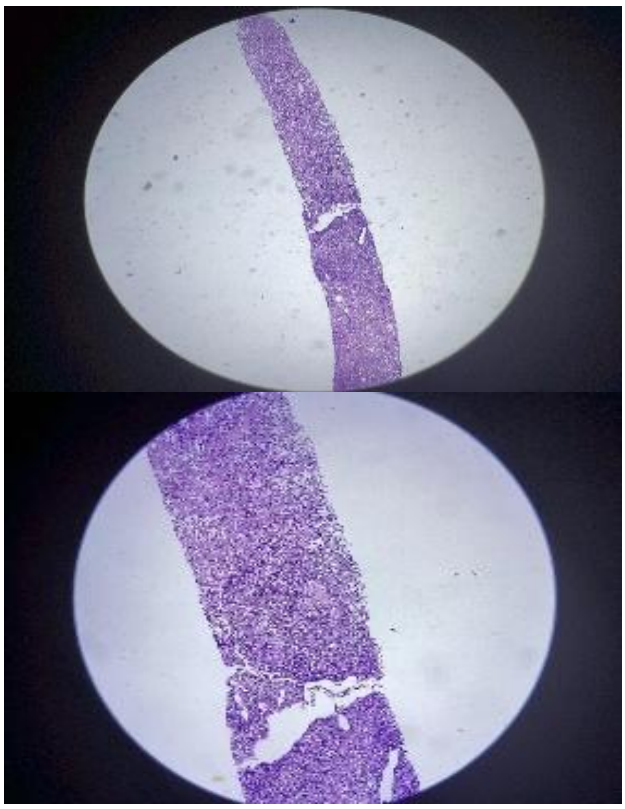

Figure 3: 10× H and E section from the right iliac lymphnode biopsy.

Gross examination

Received multiple irregular, soft, whitish, thread-like tissue fragments labelled as right iliac lymph node biopsy. The tissue fragments collectively measure approximately 1.0×0.5 cm in aggregate, with the largest fragment measuring up to 1.2 cm in greatest dimension.

All tissue fragments were processed in toto. Section A- Multiple tissue bits.

Microscopic examination

Microscopic examination of the lymph node biopsy, including multiple deeper sections, revealed extensive areas of hyalinized stroma diffusely infiltrated by atypical lymphoid cells. These cells were arranged in nesting patterns as well as in small irregular clusters, disrupting the normal lymph node architecture.

The individual tumor cells exhibited hyperchromatic nuclei with irregular nuclear contours and a moderate degree of pleomorphism. Occasional cells showed cytoplasmic clearing, and mitotic activity was appreciable, indicating a high proliferative nature of the lesion.

No preserved normal lymphoid architecture was identified in the examined sections. Importantly, there was no evidence of metastatic epithelial malignancy or secondary tumor deposits in the tissue studied.

Overall, the histomorphological features are consistent with a malignant lymphoid neoplasm, suggestive of NHL. Further confirmation and subtyping require correlation with immunohistochemical studies.

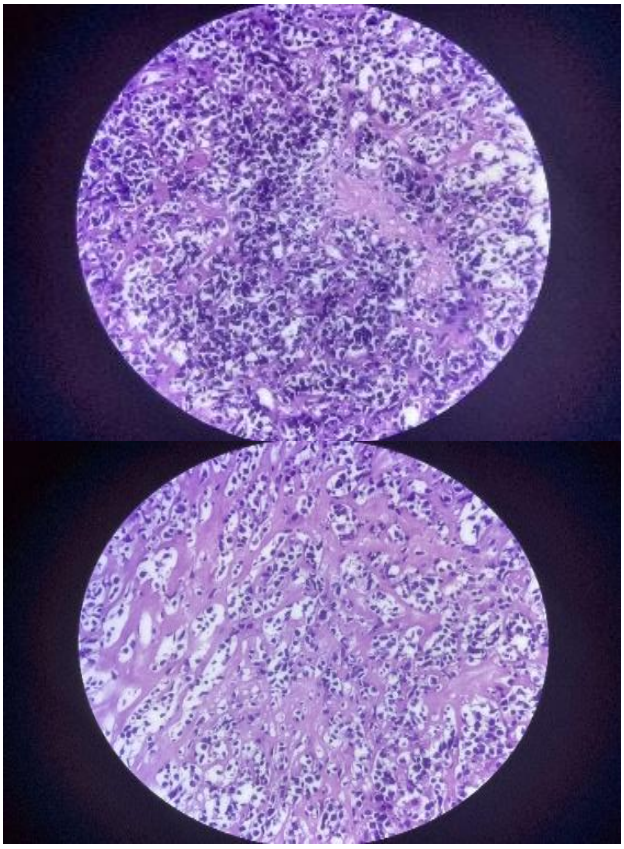

Figure 4: 40× H and E section from the right iliac lymphnode biopsy.

Immunohistochemistry

The neoplastic cells showed strong positivity for T-cell markers including CD3, CD4, CD5, and CD7. The tumour cells were also positive for leucocyte common antigen (LCA) and vimentin, supporting their lymphoid origin.

The proliferative index, assessed by Ki-67, was markedly elevated at approximately 90-95%, indicating a highly aggressive tumor.

Tumour cells showed focal (patchy) positivity for CD117.

The neoplastic cells were negative for B-cell markers (CD20, PAX-5), epithelial marker (cytokeratin), and other markers including Tdt, CD34, CD8, CD56, Granzyme B, CD1a, CD123, and MPO.

Interpretation

The immunoprofile is consistent with a mature T-cell lineage neoplasm, with absence of B-cell and immaturity markers. The high Ki-67 index suggests a high-grade lesion.

Final diagnosis

Findings are diagnostic of high-grade T-cell NHL. Patchy CD117 positivity is noted, while immaturity markers (Tdt, CD34, CD1a) are negative, supporting a mature T-cell phenotype.

Further evaluation with bone marrow examination and flow cytometry is advised for staging and comprehensive disease assessment.

Radiological evaluation, including contrast-enhanced CT and PET-CT, initially suggested a malignant lesion of the urinary bladder with widespread metabolically active lymphadenopathy, raising strong suspicion for Urinary bladder carcinoma with nodal metastasis.

The patient underwent cystoscopy with TURBT and bilateral DJ stenting. Histopathological examination of the bladder specimen revealed intact urothelium with underlying chronic inflammatory changes, including lymphocytic infiltration and vascular congestion, consistent with cystitis. No evidence of malignancy was identified in the bladder tissue.

Given the persistence of significant lymphadenopathy, a biopsy of the right iliac lymph node was performed. Histopathological examination demonstrated a malignant lymphoid neoplasm characterized by atypical lymphocytes with pleomorphism and architectural effacement.

Immunohistochemistry confirmed a diagnosis of high-grade T-cell NHL, with tumor cells positive for CD3, CD4, CD5, and CD7, and a markedly elevated proliferative index (Ki-67: 90-95%). The neoplastic cells were negative for B-cell and immaturity markers, supporting a mature T-cell phenotype.

Thus, final diagnosis was established as high-grade T-cell NHL with coexisting chronic cystitis of urinary bladder.

DISCUSSION

NHL commonly presents with peripheral lymphadenopathy; however, extranodal involvement occurs in approximately 25-40% of cases. Urinary bladder involvement is exceptionally uncommon, accounting for less than 0.2% of extranodal lymphomas and less than 1% of all bladder tumors. Most reported bladder lymphomas are of B-cell origin, particularly extranodal marginal zone lymphoma (MALT lymphoma) and diffuse large B-cell lymphoma (DLBCL). High-grade T-cell lymphoma involving the urinary bladder is exceedingly rare, making the present case an unusual diagnostic challenge.

Our patient initially presented with CT and PET-CT findings highly suggestive of urinary bladder carcinoma with metastatic lymphadenopathy. Similar radiological appearances have been described by Kim et al who reported that bladder lymphoma often manifests as focal or diffuse bladder wall thickening with increased FDG uptake, making differentiation from urothelial carcinoma difficult on imaging alone.[15] They emphasized that imaging findings are nonspecific and require histopathological confirmation.

In the present case, transurethral resection of bladder tissue demonstrated only chronic cystitis without evidence of malignancy, despite strong radiological suspicion of carcinoma. Persistent generalized lymphadenopathy prompted biopsy of the right iliac lymph node, which ultimately established the diagnosis of high-grade mature T-cell NHL by histopathology and immunohistochemistry. This sequence highlights the importance of investigating discordant clinical, radiological, and pathological findings rather than relying solely on imaging studies.

Bates et al reviewed 11 cases of urinary bladder lymphoma and concluded that clinical manifestations frequently resemble bladder carcinoma because patients commonly present with hematuria, dysuria, urinary frequency, or bladder wall thickening.[16] Consequently, definitive diagnosis depends on tissue biopsy and immunophenotypic characterization rather than radiological findings alone.

CONCLUSION

This case highlights an unusual and diagnostically challenging presentation of NHL mimicking Urinary bladder carcinoma on clinical and radiological evaluation. The presence of bladder wall thickening along with extensive lymphadenopathy led to an initial suspicion of metastatic bladder malignancy. However, histopathological examination of bladder tissue revealed only cystitis, while lymph node biopsy established the diagnosis of lymphoma.

This case underscores the critical importance of tissue diagnosis in cases with discordant clinical and imaging findings. It also emphasizes that lymphoproliferative disorders should be considered in the differential diagnosis of bladder masses with lymphadenopathy to avoid misdiagnosis and inappropriate management.

Early and accurate diagnosis through combined histopathological and immunohistochemical evaluation is essential for guiding appropriate treatment and improving patient outcomes.

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