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Primary Extranodal Non-Hodgkin Lymphoma of the Urinary Bladder: A Case Report

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ABSTRACT

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Background: Primary extranodal non-Hodgkin lymphoma (NHL) of the urinary bladder is an exceptionally rare malignancy, accounting for less than 0.2% of extranodal lymphomas. Its clinical and radiological features often mimic urothelial carcinoma, making diagnosis challenging.

Case Presentation: A 50-year-old male presented with a six-week history of painless gross hematuria, dysuria, increased urinary frequency, and intermittent left flank pain. He had no constitutional symptoms suggestive of systemic lymphoma.

Clinical Findings and Investigations: Ultrasonography and CT intravenous urography revealed an irregular bladder mass involving the left lateral wall and vesicoureteral junction, causing severe left hydroureteronephrosis. Cystoscopy demonstrated papillary and sessile bladder lesions. Following transurethral resection of the bladder tumor (TURBT), histopathology with immunohistochemistry confirmed diffuse large B-cell lymphoma (DLBCL) of the urinary bladder.

Intervention and Outcome: The patient received six cycles of R-CHOP chemotherapy, achieving marked clinical and radiological regression. Follow-up PET-CT and repeat TURBT showed complete remission with no evidence of recurrent disease. Repeat biopsy revealed only mild chronic cystitis.

Conclusion: Primary bladder DLBCL is a rare but important differential diagnosis of bladder tumors. A definitive diagnosis relies on histopathological and immunohistochemical evaluation. Early recognition and treatment with R-CHOP chemotherapy can result in excellent clinical outcomes while avoiding unnecessary radical surgery.

Keywords: Primary bladder lymphoma; diffuse large B-cell lymphoma; extranodal non-Hodgkin lymphoma; hematuria; urinary bladder; R-CHOP.

INTRODUCTION

Non-Hodgkin lymphomas (NHLs) are the most common blood cancers, with diffuse large B-cell lymphoma (DLBCL) is the most prevalent subtype comprising 30 to 40%. DLBCL consists of various subtypes with distinct morphology, immunohistochemical profiles, genetic traits, and biological behaviors per WHO classification (1). Bladder lymphomas are of two types: primary bladder lymphoma, a rare condition originating solely in the bladder, and secondary bladder lymphoma, which is more common and arises from lymphoma at another site. (2). Lymphomas can develop in nearly any organ, with about one-third being extra-nodal; less than 5% involve the genitourinary system (3). Primary bladder lymphoma is rare, comprising just 0.2% of extra-nodal lymphoma cases (4). Hematuria is the most common symptom of UB-DLBCL, along with frequency, dysuria, nocturia, lower abdominal pain, and recurrent UTIs. Diagnosis involves imaging (ultrasound, CT, MRI), cystoscopy, and bladder biopsy evaluation.

CASE PRESENTATION

A 50-year-old male farmer presented to the urology outpatient department with a one-and-a-half-month history of painless gross hematuria with intermittent passage of blood clots. He also reported dysuria, increased urinary frequency, and intermittent dull, non-radiating pain in the left flank. There was no history of smoking, weight loss, fever, night sweats, or other constitutional symptoms.

On physical examination, the patient was hemodynamically stable, with no pallor, peripheral lymphadenopathy, or hepatosplenomegaly. Routine laboratory investigations, including complete blood count, coagulation profile, liver and renal function tests, and serum electrolytes, were within normal limits. Serological tests for human immunodeficiency virus (HIV), hepatitis B surface antigen (HBsAg), and hepatitis C virus (HCV) were non-reactive. Urinalysis demonstrated 15–20 leukocytes per high-power field and numerous red blood cells.

Ultrasonography revealed an irregular mass involving the left lateral wall of the urinary bladder extending to the left vesicoureteral junction (VUJ), causing severe left hydroureteronephrosis. Contrast-enhanced computed tomography intravenous urography (CT-IVU) confirmed a bladder mass involving the left VUJ with resultant gross left hydroureteronephrosis. Enlarged left external iliac lymph nodes were also noted, inseparable from the thickened bladder wall (Figure 1).

The patient was admitted, and a left percutaneous nephrostomy (PCN) was performed to relieve urinary obstruction. A cystoscopic examination demonstrated papillary lesions involving both lateral lobes of the prostate and sessile lesions at the bladder neck, left lateral bladder wall, and left VUJ. Transurethral resection of the bladder tumor (TURBT) was performed, and histopathological examination with immunohistochemistry confirmed diffuse large B-cell lymphoma (DLBCL) of the urinary bladder (Figure 2).

The patient was referred to the oncology service and received six cycles of the R-CHOP chemotherapy regimen (rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone). Three months after treatment initiation, follow-up imaging demonstrated marked regression of the bladder lesion. A subsequent positron emission tomography-computed tomography (PET-CT) scan showed only diffuse bladder wall thickening without evidence of metabolically active residual disease. The patient was referred to the urology team for repeat cystoscopic evaluation. Repeat cystoscopy revealed mildly hyperemic bladder mucosa with no visible recurrence at the previous tumor site. Biopsies obtained from the prior resection site on the left lateral bladder wall showed mild acute-on-chronic cystitis without evidence of residual lymphoma.

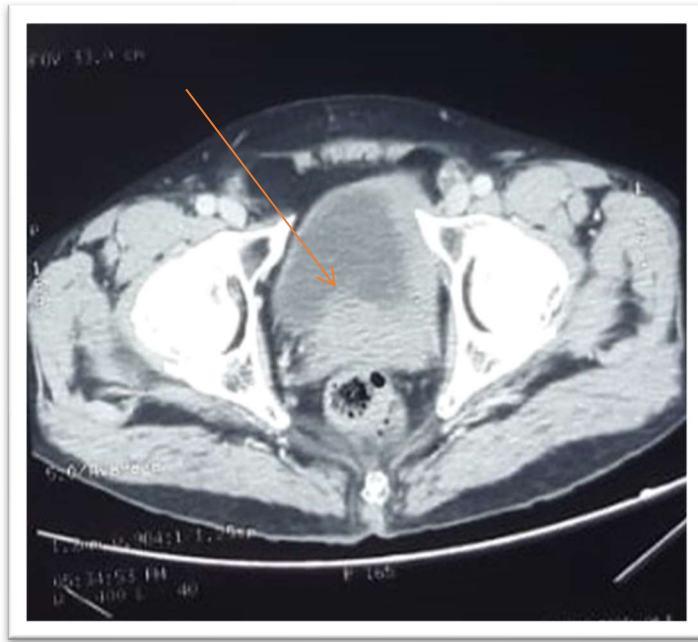


Figure 1 Contrast-enhanced computed tomography intravenous urography (CT-IVU) confirmed a bladder mass around 4cm x 5.8cm in size, involving the left VUJ as pointed by red arrow.

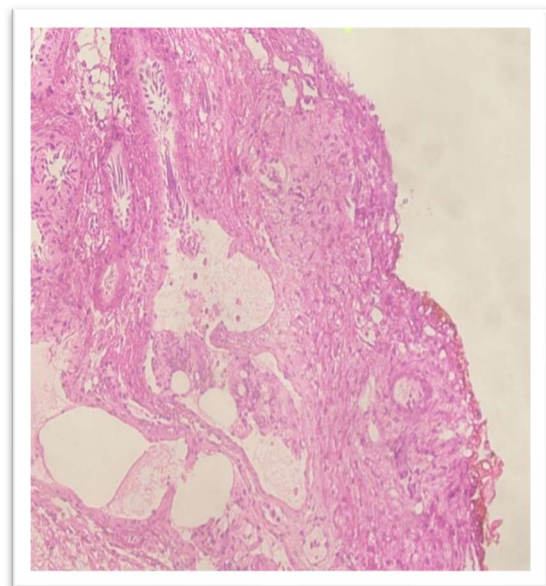


Figure 2 Showing histopathological examination finds large atypical lymphoid cells resembling centro blasts consistent with diffuse large B-cell lymphoma (DLBCL) of the urinary bladder.

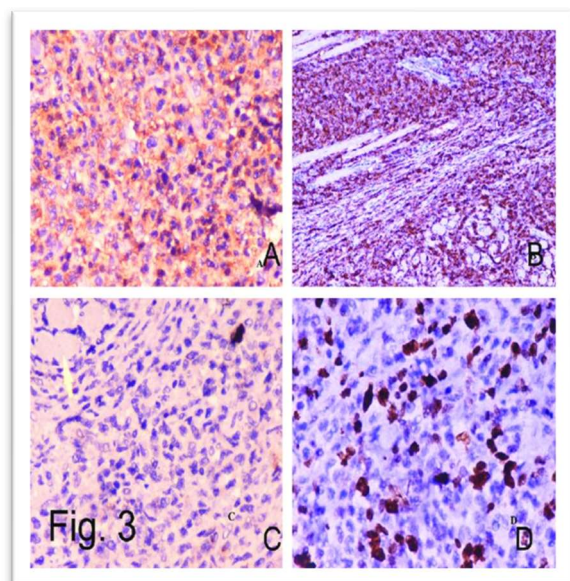


Figure 3. Shows immunohistochemical analysis which is POSITIVE: A-CD20, B-LCA, D-Ki67-(50-60%); NEGATIVE: C-CD3. Available via license: CC BY-NC-ND 4.0

DISCUSSION

In 1885, Eve and Chaffey first reported primary malignant lymphoma of the urinary bladder, a rare condition due to the bladder's lack of lymphoid tissue. It constitutes less than 1% of bladder neoplasms and 0.2% of extra-nodal lymphomas, commonly affecting the GI tract, head and neck, skin, CNS, bone, testis, breast, and thyroid (5). Secondary involvement of the bladder occurs in 10% to 50% of cases, most frequently between the fourth and sixth decades of life (6). Female to male ratio is higher in non-Hodgkin lymphoma of bladder. (7).

The presentation often mimics bladder carcinoma, with symptoms such as hematuria, dysuria, and irritative voiding, leading to delayed recognition. (8). In our case, the patient initially presented with features suggestive of a conventional bladder tumor, involving left lateral wall and left vesico ureteral junction and biopsy and immunohistochemistry confirmed primary NHL. Bladder lymphoma typically appears as a sessile mass at the base or trigone, often mistaken for urothelial carcinoma. CT and MRI have low diagnostic sensitivity, while cystoscopy, histology, and immunohistochemistry are crucial, and our patient was diagnosed on histopathological analysis. These tumors, usually seen at the dome or lateral walls, consist of large atypical lymphoid cells resembling Centro blasts or immunoblasts. DLBCL expresses CD20, CD79a, and BCL-2, with variable CD10, CD5, and BCL-6 positivity.

Differential diagnoses include poorly differentiated carcinoma, melanoma, Burkitt's, and Hodgkin's lymphoma, highlighting the importance of immunohistochemistry for confirmation. Treatment options for primary extra nodal NHL include radical cystectomy, radiotherapy, and chemotherapy, depending on tumor behavior, progression risk, and patient condition. For MALT lymphoma, TURBT is preferred initially, followed by chemotherapy or radiation if needed (9). While no size criteria exist for TURBT in bladder lymphoma, guidelines for urothelial cancer (Ta, Tis, T1) may apply. Chemotherapy regimens like R-CHOP, CHOP, ChlVP, and ChlD have been effective, with R-CHOP being the most used (10).

This rare case highlights the need to consider malignant lymphoma in the differential diagnosis of bladder tumors, as early identification can lead to full remission and a favorable outcome. Since standardized treatment guidelines are lacking, this report contributes useful insights into existing medical knowledge.

CONCLUSION

Given its rarity, studies on the clinicopathological features of primary DLBCL in the urinary bladder are still scarce. Recognizing this condition early is essential for urologists and pathologists, as timely diagnosis allows for prompt and effective treatment of this aggressive but treatable lymphoma.

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ETHICAL APPROVAL

Ethical approval to report this case report was obtained from Research and Ethical Committee bearing approval number 496/chairman/R&E/Committee/IKD

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DECLARATION OF COMPETING INTEREST

The authors have no conflicts of interest to disclose in relation to this work.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available on request.

CONTRIBUTORSHIP

JAS and AH drafted the manuscript. AH, LA & RH supervised the work, RM and IA critically reviewed the manuscript. All authors approved the final manuscript for publication.

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