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Case Report

Neuroendocrine Carcinoma (Large Cell Type) of Urinary Bladder: A Case Report

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ABSTRACT

Background: Large cell neuroendocrine carcinoma (LCNEC) of the urinary bladder is a rare and highly aggressive malignant neoplasm, accounting for less than 1% of all bladder cancers. Owing to its rarity and overlapping histopathological features with other poorly differentiated bladder tumors, accurate diagnosis requires careful clinicopathological correlation.

Case Presentation: A 47-year-old man presented with painless macroscopic hematuria for three months. He had a long-standing history of smoking and alcohol consumption. Contrast-enhanced computed tomography revealed a mass involving the anterior wall of the urinary bladder with extravesical extension and multiple retroperitoneal lymph nodes. Histopathological examination of the biopsy specimen demonstrated solid sheets and compact clusters of poorly differentiated large neoplastic cells with a high nuclear-to-cytoplasmic ratio, vesicular nuclei, prominent nucleoli, focal tubular differentiation, and extensive necrosis. The Ki-67 proliferation index was approximately 90%, indicating a highly proliferative tumor. Based on the clinical, radiological, and histopathological findings, a diagnosis of large cell neuroendocrine carcinoma of the urinary bladder was established.

Conclusion: Large cell neuroendocrine carcinoma of the urinary bladder is an uncommon malignancy with an aggressive clinical course and poor prognosis. Early recognition of its characteristic histopathological features, supported by clinicoradiological correlation and immunohistochemical evaluation, is essential for accurate diagnosis and appropriate management.

Keywords: Large cell neuroendocrine carcinoma; Urinary bladder; Hematuria; Histopathology; Ki-67; Case report.

INTRODUCTION

Large cell neuroendocrine carcinoma (LCNEC) of the urinary bladder is an exceptionally rare and highly aggressive malignant neoplasm, accounting for less than 1% of all primary bladder cancers. It is classified among the neuroendocrine tumors of the urinary bladder and is associated with an aggressive clinical course, early metastasis, and poor prognosis. [1] Because of its rarity, the clinicopathological characteristics and optimal management of this tumor remain poorly defined. [2] The histogenesis of LCNEC is not completely understood. Smoking has been identified as one of the major risk factors, and the tumor is frequently associated with conventional urothelial carcinoma, although pure LCNEC has also been reported. [3] Patients commonly present with painless gross hematuria, while some may also experience lower urinary tract symptoms depending on the size and extent of the lesion. [4] Radiological investigations are useful for assessing local tumor invasion and distant metastasis; however, imaging findings are generally nonspecific. [5] Histopathological examination remains the cornerstone of diagnosis. Microscopically, LCNEC is characterized by large polygonal tumor cells arranged in solid sheets, nests, or trabeculae with abundant cytoplasm, vesicular nuclei, prominent nucleoli, frequent mitotic activity, and extensive tumor necrosis. [6] Immunohistochemical markers and a high Ki-67 proliferation index further support the diagnosis and help distinguish LCNEC from other poorly differentiated malignancies of the urinary

bladder. [7] Due to the limited number of reported cases, documentation of individual cases remains valuable for improving awareness of the clinicopathological features and diagnostic challenges associated with this uncommon malignancy. [2,7] We report a rare case of large cell neuroendocrine carcinoma of the urinary bladder in a 47-year-old male presenting with painless macroscopic hematuria and highlight its clinicoradiological and histopathological findings.

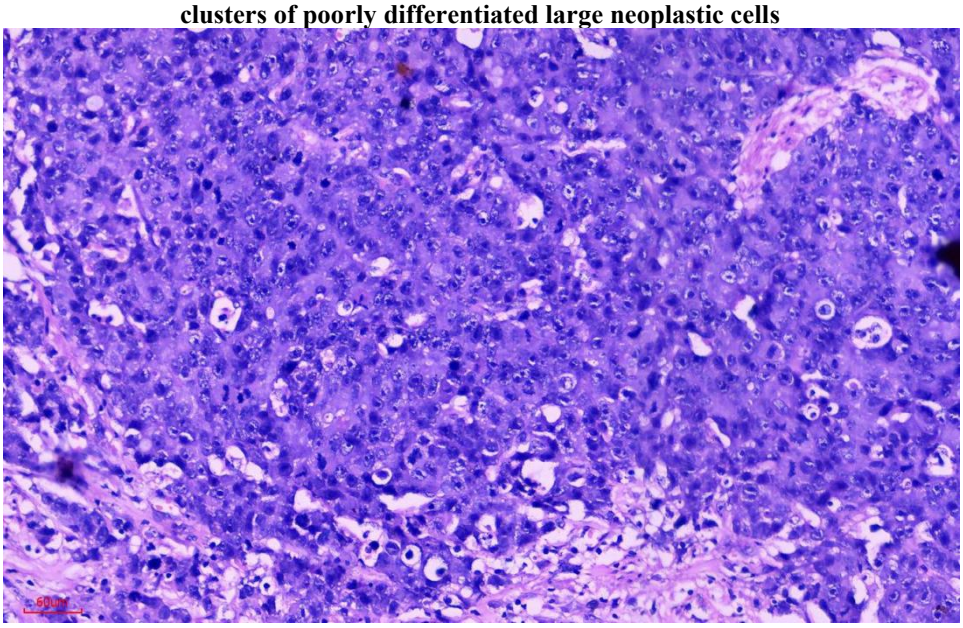
CASE PRESENTATION

A 47-year-old male presented with complaints of painless macroscopic hematuria for the past three months. He had a long-standing history of smoking and alcohol consumption but had no other significant medical or surgical history. Clinical evaluation and radiological investigations were performed to determine the underlying cause of hematuria.

Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis revealed a mass involving the anterior wall of the urinary bladder with extravesical extension and multiple enlarged retroperitoneal lymph nodes, suggestive of a malignant neoplasm.

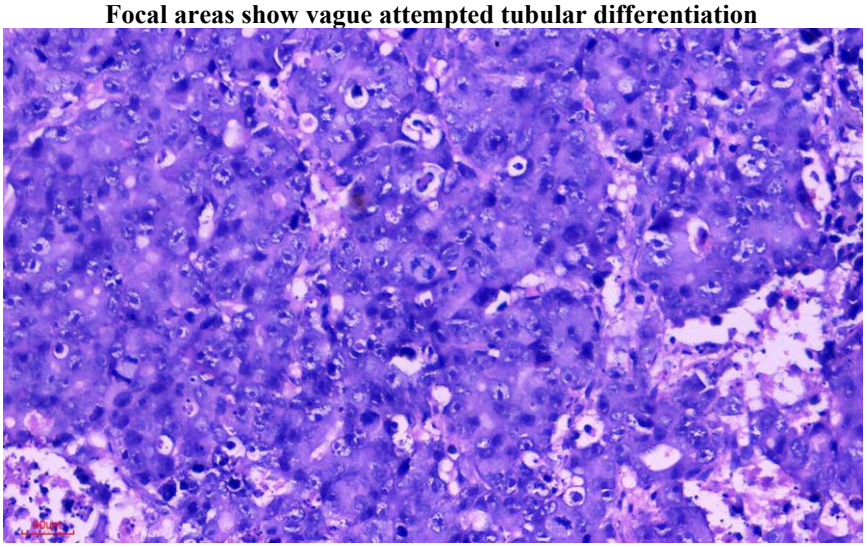
A biopsy specimen obtained from the urachal lesion was received in the Department of Pathology for histopathological evaluation. Hematoxylin and eosin-stained sections demonstrated infiltration by poorly differentiated large neoplastic cells arranged in solid sheets and compact clusters. (Figure 1)

Figure 1: H&E, 20x Biopsy from Urachus- Tumor fragments show infiltration by solid sheets and compact clusters of poorly differentiated large neoplastic cells



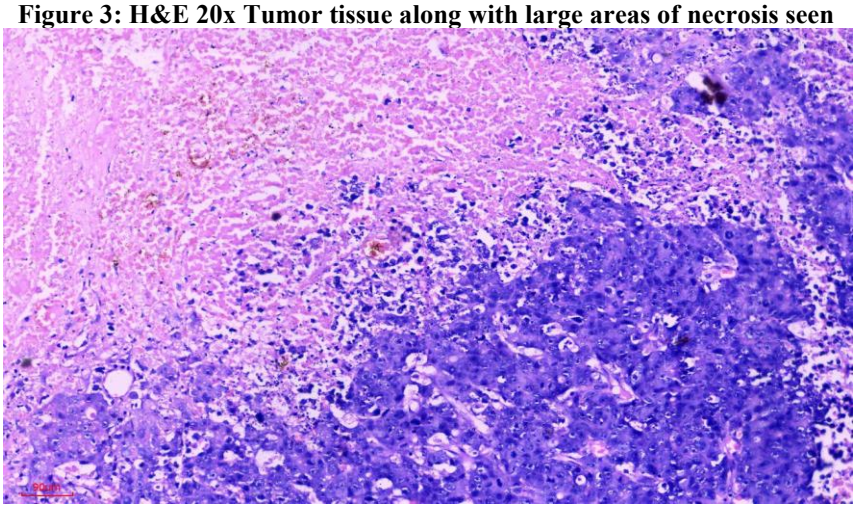
The tumor cells exhibited a high nuclear-to-cytoplasmic ratio, vesicular nuclei, conspicuous nucleoli, and moderate amounts of eosinophilic cytoplasm. Focal areas showed vague tubular differentiation. (Figure 2)

Figure 2: H&E, 40x Individual tumor cells show high N:C ratio, large vesicular nuclei with prominent nucleoli. Focal areas show vague attempted tubular differentiation



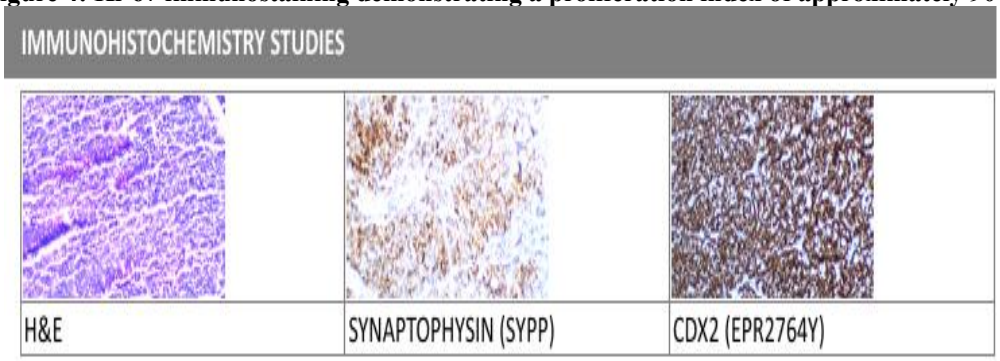
Extensive areas of tumor necrosis were also identified. (Figure 3)

Figure 3: H&E 20x Tumor tissue along with large areas of necrosis seen



Immunohistochemical evaluation demonstrated a Ki-67 labeling index of approximately 90%, indicating a highly proliferative neoplasm. (Figure 4)

Figure 4: Ki-67 immunostaining demonstrating a proliferation index of approximately 90%.



Based on the clinical presentation, radiological findings, and characteristic histopathological features, a diagnosis of large cell neuroendocrine carcinoma of the urinary bladder was established.

DISCUSSION

Large cell neuroendocrine carcinoma (LCNEC) of the urinary bladder is an uncommon and highly aggressive malignancy, accounting for less than 1% of all primary bladder tumors. Because of its rarity, most of the available literature consists of isolated case reports and small case series, making its clinicopathological characteristics and management strategies incompletely understood. [8] Patients with LCNEC commonly present with painless gross hematuria, similar to other malignant tumors of the urinary bladder. Smoking has been recognized as one of the major risk factors, and many patients are diagnosed at an advanced stage because of the aggressive biological behavior of the tumor. [9] In the present case, the patient was a 47-year-old chronic smoker who presented with painless macroscopic hematuria, and radiological evaluation demonstrated a bladder mass with extravesical extension and retroperitoneal lymphadenopathy, suggesting advanced disease. These findings are consistent with previously published reports. [10] Histopathological examination remains the cornerstone for diagnosis. LCNEC typically demonstrates sheets, nests, or trabeculae of large pleomorphic tumor cells with abundant cytoplasm, vesicular nuclei, prominent nucleoli, high mitotic activity, and extensive necrosis. [11] In the present case, the biopsy showed poorly differentiated large neoplastic cells arranged in solid sheets and compact clusters with a high nuclear-to-cytoplasmic ratio, conspicuous nucleoli, focal tubular differentiation, and extensive necrosis. The Ki-67 labeling index was approximately 90%, indicating a highly proliferative tumor, which is consistent with the aggressive biological behavior of LCNEC. [12] The prognosis of LCNEC remains poor because of its aggressive nature and high metastatic potential. Early diagnosis through clinicoradiological correlation, histopathological examination, and immunohistochemical evaluation is essential for appropriate patient management. [13] Since only a limited number of cases have been reported, documenting additional cases will help improve the understanding of the clinicopathological characteristics and biological behavior of this rare urinary bladder malignancy. [14,15]

CONCLUSION

Large cell neuroendocrine carcinoma of the urinary bladder is a rare and highly aggressive malignancy with a poor prognosis. Its clinical presentation often overlaps with other bladder tumors, making accurate diagnosis dependent on careful clinicoradiological correlation and histopathological evaluation. The present case highlights the importance of recognizing the characteristic morphological features of LCNEC for timely diagnosis. Reporting such rare cases contributes

to the existing literature and may improve the understanding of its clinicopathological characteristics and future management strategies.

Conflict of Interest: The authors declare that they have no conflict of interest.

REFERENCES

1. Zhou Y, Yang L. Large-cell neuroendocrine carcinoma of the bladder: A case report. World J Clin Oncol. 2024 Sep 24;15(9):1239-1244. doi: 10.5306/wjco.v15.i9.1239. [PMID: 39351458].
2. Bai LL, Guo YX, Song SY, Li R, Jiang YQ. Primary large cell neuroendocrine carcinoma of the bladder: A case report. World J Clin Cases. 2024 Jul 26;12(21):4783-4788. doi: 10.12998/wjcc.v12.i21.4783. [PMID: 39070845].
3. Sun Z, Liang X, Zhang C, Song S, Gao J. Primary pure large cell neuroendocrine carcinoma of the urinary bladder: a case report and literature review. Front Oncol. 2024 Mar 11;14:1337997. doi: 10.3389/fonc.2024.1337997. [PMID: 38529382].
4. Akbulut D, Al-Ahmadie H. Updates on Urinary Bladder Tumors With Neuroendocrine Features. Adv Anat Pathol. 2024 May 1;31(3):169-177. doi: 10.1097/PAP.0000000000000433. [PMID: 38523484].
5. Wang G, Yuan R, Zhou C, Guo C, Villamil C, Hayes M, et al. Urinary Large Cell Neuroendocrine Carcinoma: A Clinicopathologic Analysis of 22 Cases. Am J Surg Pathol. 2021 Oct 1;45(10):1399-1408. doi: 10.1097/PAS.0000000000001740. [PMID: 34074810].
6. Sanguedolce F, Calò B, Chirico M, Tortorella S, Carrieri G, Cormio L. Urinary Tract Large Cell Neuroendocrine Carcinoma: Diagnostic, Prognostic and Therapeutic Issues. Anticancer Res. 2020 May;40(5):2439-2447. doi: 10.21873/anticanres.14213. [PMID: 32366387].
7. Shehabeldin AN, Ro JY. Neuroendocrine tumors of genitourinary tract: Recent advances. Ann Diagn Pathol. 2019 Oct;42:48-58. doi: 10.1016/j.anndiagpath.2019.06.009. [PMID: 31306859].
8. WHO Classification of Tumours Editorial Board. Urinary and Male Genital Tumours. 5th ed. Lyon: International Agency for Research on Cancer; 2022.
9. Humphrey PA, Moch H, Cubilla AL, Ulbright TM, Reuter VE. The 2016 WHO Classification of Tumours of the Urinary System and Male Genital Organs-Part B: Prostate and Bladder Tumours. Eur Urol. 2016 Jul;70(1):106-119. doi: 10.1016/j.eururo.2016.02.028. [PMID: 26996659].
10. Cui J, Zhao Q, Yu C, Ma P, Li S. Recurrent bladder urothelial carcinoma complicated with primary bladder large cell neuroendocrine carcinoma: a case report and literature review. Front Oncol. 2024 Aug 2;14:1369649. doi: 10.3389/fonc.2024.1369649. [PMID: 39156709].
11. Pini GM, Uccella S, Corinti M, Colecchia M, Pelosi G, Patriarca C. Primary MiNEN of the urinary bladder: an hitherto undescribed entity composed of large cell neuroendocrine carcinoma and adenocarcinoma with a distinct clinical behavior: Description of a case and review of the pertinent literature. Virchows Arch. 2021 Jul;479(1):69-78. doi: 10.1007/s00428-021-03023-7. [PMID: 33454836].
12. Dasari A, Shen C, Halperin D, Zhao B, Zhou S, Xu Y, et al. Trends in the Incidence, Prevalence, and Survival Outcomes in Patients With Neuroendocrine Tumors in the United States. JAMA Oncol. 2017 Oct 1;3(10):1335-1342. doi: 10.1001/jamaoncol.2017.0589. [PMID: 28448665].
13. Kouba E, Cheng L. Neuroendocrine Tumors of the Urinary Bladder According to the 2016 World Health Organization Classification: Molecular and Clinical Characteristics. Endocr Pathol. 2016 Sep;27(3):188-99. doi: 10.1007/s12022-016-9444-5. [PMID: 27334654].
14. Gandhi J, Chen JF, Al-Ahmadie H. Urothelial Carcinoma: Divergent Differentiation and Morphologic Subtypes. Surg Pathol Clin. 2022 Dec;15(4):641-659. doi: 10.1016/j.path.2022.07.003. [PMID: 36344181].
15. Lopedote P, Yosef A, Kozyreva O. A Case of Bladder Large Cell Carcinoma with Review of the Literature. Case Rep Oncol. 2022 Mar 29;15(1):326-337. doi: 10.1159/000521607. [PMID: 35529284].