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HISTOPATHOLOGICAL SPECTRUM OF URINARY BLADDER TUMORS: ONE YEAR STUDY IN A TERTIARY HEALTH CARE HOSPITAL

Pathology

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ABSTRACT

Introduction: Urinary bladder cancer is heterogeneous group of neoplasms and the second most common urogenital carcinomas worldwide. Urothelial tumors are more common and classified into inverted urothelial papilloma, papillary urothelial neoplasm of low malignant potential, invasive urothelial carcinoma along with its variants and non-invasive urothelial neoplasms. Stage of the tumor is the most important prognostic factor. The present study was conducted to describe the histopathological spectrum of various urinary bladder tumors **Aim:** To study histopathological spectrum of urinary bladder neoplasms in specimens and observe muscle invasion. **Material & Methods:** All neoplastic bladder biopsies specimens proven on histopathology received in Department of Pathology during period of one year retrospectively were included in this study. **Results:** In the present study total of 25 neoplastic bladder tumors were evaluated. Most common affected age group was 51-60 years. Males were commonly affected. Among all cases, 4% were benign and 96% were malignant tumors. Muscle invasion (26.3%) was noted. **Conclusions:** The present study has emphasized on histopathological spectrum of urinary bladder tumors to create awareness of histological types and increasing incidence of invasive urothelial carcinoma more than non-invasive carcinoma.

KEYWORDS

Histopathology, Invasive urothelial carcinoma, Non-invasive papillary urothelial carcinoma

INTRODUCTION

Urinary bladder carcinomas is the tenth most common cancer in the world. It is seen more commonly in men about four times more than women. [1] The overall incidence of urinary bladder cancer in India overall is 2.25%. [2] About 90% of all cases of urinary bladder carcinomas are predominantly urothelial tumors. [3] Despite advances in non-invasive imaging with cystoscopy being the primary tool for screening, histopathological diagnosis is required for accurate and definitive diagnosis of histological type of bladder carcinoma for staging and treatment. [4]

MATERIAL AND METHODS:

A retrospective study of all transurethral bladder tumor resection specimens included which were received during the period of 1 year from January 2022 to December 2022. Non-neoplastic bladder lesions were not included in this study. A total of 25 cases of neoplastic bladder tumors were evaluated in Pathology department of Grant Government Medical College and Sir JJ Group of Hospital, Mumbai, Maharashtra. Patient clinical history was obtained from the patient's case file and institution's histopathological requisition forms. All samples were received in a well-labelled and sealed jar containing 10% buffered formalin followed by routine tissue processing and cut at 3-4 micron thick sections and stained with Hematoxylin and Eosin. These slides were then studied and reported according to latest CAP protocol and WHO classification of tumors (2022).

RESULTS:

In our study total 25 cases of TURBT were received in Department of Pathology over one year period. Maximum incidence of bladder carcinomas are in the age group of 51-60 years old. (28%)

Majority of the patients were males (76%) with male to female ratio of 3.1:1. Most common symptom was hematuria. The most common site of tumor was lateral wall of bladder. Out of 25 urinary bladder carcinoma cases, majority were malignant (96%) and one case was benign (4%). Histomorphological type of urinary bladder carcinomas reported was Invasive urothelial carcinoma (60%) followed by Non-Invasive papillary urothelial carcinoma, Low grade (28%) and Non-Invasive papillary urothelial carcinoma, High grade contributing to 4%. Interesting case of single case of mucinous type of adenocarcinoma of bladder was reported. Single benign cases of Inverted urothelial papilloma was reported.

Table 1: Age incidence of Bladder carcinoma

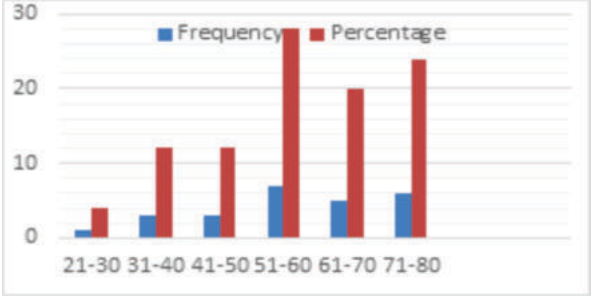

Table 2: Histological type of Urinary Bladder Carcinoma

Histological Type of Tumor	Frequency	Percentage
BENIGN		
Inverted Urothelial Papilloma	1	4%
MALIGNANT		
Non-invasive papillary urothelial carcinoma, low-grade	7	28%
Non-invasive papillary urothelial carcinoma, high-grade	1	4%
Invasive urothelial carcinoma	15	60%
Adenocarcinoma	1	4%
Total	25	100%

Among 19 cases in which deep muscle was sent, muscle involvement was seen in 5 cases. (26.3%)

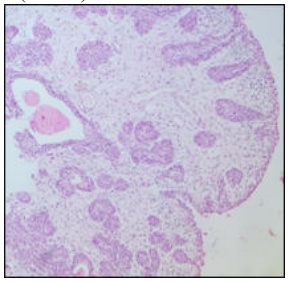

Figure 1: Inverted Urothelial Papilloma (H & E, 20X)

Table 3: Presence of Muscle invasion in Bladder carcinoma

Muscle Invasion	Frequency	Total	Percentage
Present	5	19	26.3%
Absent	13	19	68.4%
Non-Representative	1	19	5.2%

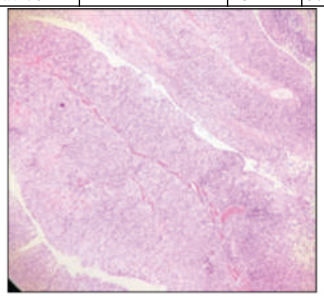

Figure 2: Non-invasive Papillary Urothelial Carcinoma, Low Grade:(H & E stain, 20X)

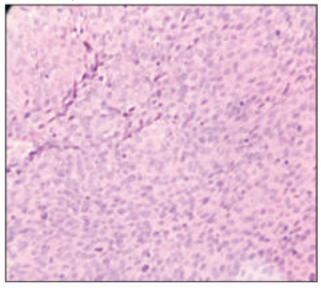

Figure 3: Non-invasive Papillary Urothelial Carcinoma, Low Grade:(H & E stain, 40X)

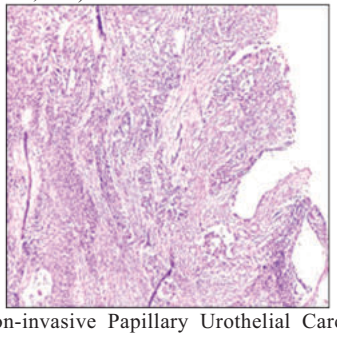

Figure 4: Non-invasive Papillary Urothelial Carcinoma, High Grade:(H & E stain, 20X)

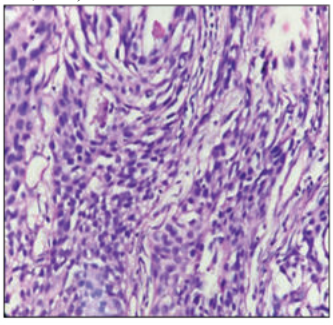

Figure 5: Non-invasive Papillary Urothelial Carcinoma, High Grade:(H & E stain, 40X)

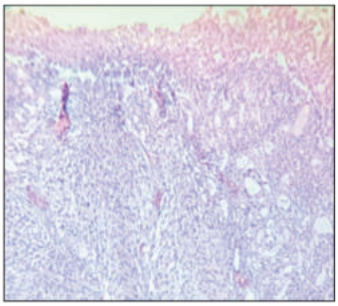

Figure 3 : Invasive urothelial carcinoma (H & E stain,20X)

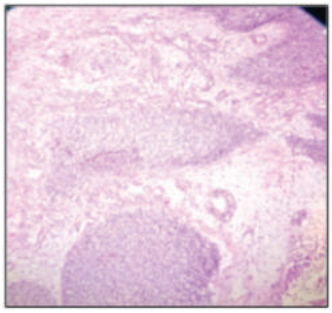

Figure 4: Lamina Propria invasion (H & E stain, 20x)

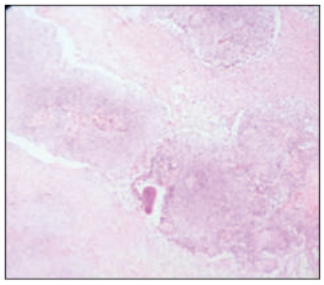

Figure 5: Muscle Invasion (H & E stain, 20x)

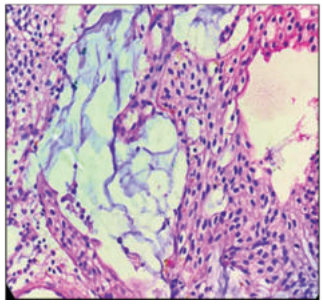

Figure 6: Mucinous Adenocarcinoma of Bladder (H & E stain,40x)

DISCUSSION:

Urinary bladder carcinomas are the second most common urogenital malignancy after prostate carcinomas which show significant morbidity and mortality. [5] Early diagnosis is by use of urine cytology, radiological investigations and cystoscopy. However, gold standard for diagnosis is histopathology. [6] On CT scan, urinary bladder wall thickening does not always indicate invasion into muscle and also in diagnosing subepithelial tissue invasion it shows low sensitivity. [7] Hence, meticulous histopathological examination of TURBT and cystoscopy specimens remains the mainstay for definitive diagnosis especially in informing the clinician invasive or non-invasive nature of the tumor.

In this study, 25 urinary bladder carcinoma cases were studied. The most common age group reported was 51-60 years accounting for 28%. This is in contrast to most studies by Goyal B et al, Mullagura A et al and Jhaveri PN et al which documented incidence of carcinomas at mean age of 60 years and above. [8,9,10] In our study the second most common age group was 71-80 year age group. Interestingly our study also noted 1 case of primary mucinous adenocarcinoma and 2 cases of non-invasive low grade carcinoma in 31-40 year age group. Most of the studies carried out before 2013 emphasise that tumor in younger population are generally benign or low grade non-invasive in nature. [12,13,14] However, recent studies like study by Goyal et al noted a trend where high grade invasive carcinomas are now found in less than 40 years age group. [8]

Bladder carcinomas are seen predominantly in male population. [11] This was also seen in our study where males were more commonly affected with bladder carcinoma accounting for 76% (19) and 24% (6) in females with male to female ratio of 3.1:1. Similar findings was seen in other studies by Ploeg M et al, Vaidya S et al and Goyal et al. [8,15,16]

Majority of the patients in present study had hematuria as the primary complaint requiring medical attention. The most common site of tumor noted was predominantly the lateral wall of bladder.

In the present study, 96% of the tumors were malignant and 4% were benign. 92% of malignant tumors were of urothelial origin. This finding correlate in other studies. [8] Two cases (4%) of inverted urothelial papilloma was noted. This correlated with study by Shah et al where inverted urothelial papilloma accounted for only 2.4% of cases. [17] Among the malignant cases, our study showed higher incidence of invasive urothelial carcinoma (60%) than non- invasive (32%) which correlated with study by Shah A et al and Jhaveri P et al. [10,17] In present study, total non-invasive papillary urothelial carcinoma were 32%, out of which low grade accounted for 28% while high grade accounted for 4% which correlates with the study done by Preethamol Set al. [18]

Out of 25 cases, muscle biopsy was received in 19 cases, 5 cases showed invasion into muscle (26.3%), 13 cases showed no invasion (68.4%) and 1 case biopsy was non-representative (5.2%). This did not correlate with study by Singhal et al where higher incidence of muscle invasion was seen in 38.0% cases. Histopathological staging indicating invasion into lamina propria and muscle is important for determining the further course of treatment for the patient. [19] Therefore, muscle biopsy should be sent along with every bladder biopsy even in clinical suspicion of benign case.

In our study no case of papillary urothelial neoplasm of low malignant potential was noted. However, our study noted a case of 73 year old female patient who came with outside diagnosis of papillary urothelial neoplasm of low malignant potential (PUNLMP) in 2020 and had received treatment. She presented to our institute with recurrence of symptoms and was diagnosed as non-invasive low grade papillary urothelial malignancy within two years. A study conducted by Maxwell JP to determine long term outcome of PUNLMP concluded that recurrence was seen in only 20.1% of the cases and they commonly recurred as PUNLMP with few cases progressing to low grade urothelial carcinoma and rarely to high grade carcinoma. [20] Hence, cases diagnosed as PUNLMP require extensive follow up over years. Also to be noted that while females are less commonly affected they present with aggressive tumor at diagnosis and in general have worse outcome than males. [21]

CONCLUSIONS:

The present study emphasizes on histopathological spectrum of urinary bladder tumors seen in our institute with highest incidence of invasive urothelial carcinoma. The muscle invasion could only be commented on in cases in which muscle biopsy was sent which is imperative for staging and prognosis**.** Hence, adequate biopsy comprising of lamina propria and deep muscle should be stressed upon for management of patients.

Conflict of Interest: None

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REFERENCES:

[1] Bray F., Ferlay J., Soerjomataram I., Siegel R.L., Torre L.A., Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J. Clin. 2018;68:394–424. doi: 10.3322/caac.21492.

[2] Sharma DD, Sharma DN, Dattal DD. Histopathological spectrum of urinary bladder tumors: One year study in a tertiary health care centre. International Journal of Research and Review. 2022;9(7):6–10.

[3] Goldblum JR, Lamps LW, McKenney JK, et al. Rosai and Ackerman's Surgical Pathology- 2 Volume Set. 11 ed. Philadelphia, PA: Elsevier - Health Sciences Division 2017.

[4] Morales K, Ryan L, Kuo T, Wu M, Chen C. Risk of internal cancers from arsenic in drinking water. Environ Health Perspect. 2000;108:655–62

[5] Lopez-Beltran A. Bladder cancer: clinical and pathological profile. Scand J Urol Nephrol Suppl 2008. Sep;218 (218):95- 109

[6] Muhammed M, Javed IK, Altaf H, Manzoor H, Syed AN. Urinary bladder tumours in sourthern Pakistan: A histopathological perspective. Middle East J Cancer. 2014;5(3):167–73

[7] Moch H, Humphrey PA, Ulbright TM, Reuter VE. Chapter 2 Tumors of urinary tract. In: WHO classification of tumours of the urinary system and male genital organs. 4th Edition. Lyon: International Agency for Research on Cancer; 2016. p. 82.

[8] Goyal B, Rao S, Sahi R, Jaiswal S. A histopathologic study of urinary bladder tumors at tertiary care center in Mid-Western region of Nepal. Asian J Med Sci [Internet]. 2018 Oct. 29 [cited 2023 Jan. 25];9(6):45-50. Available from: https://www.nepjol.info/index.php/AJMS/article/view/20685

[9] Mullagura Anusha, Inuganti V R,. P. Ramya. P. Sri Harsha. K.Nikitha Anusha mullagura MD Inuganti Venkata Renuka, P. Ramya, P. Sri Harsha, K.NikithaAnusha mullagura MD Inuganti Venkata Renuka, P. Ramya, P. Sri Harsha, K.Nikitha.Histopathological study of Urinary tract neoplasms: A five year study in a Tertiary care hospital. European Journal of Molecular & Clinical Medicine, 2022; 9(7): 3242-3250.

[10] Jhaveri P N, Makwana S V , Oza K K , Shah C K , A histopathological study of urinary bladder neoplasms. Indian J Pathol Oncol 2021;8(1):59-63

[11] Laishram RS, Kipgen P, Laishram S, Khuraijam S and Sharma DC. Urothelial tumors of the urinary bladder in Manipur: a histopathological perspective. Asian Pac J Cancer Prev 2012;13(6):2477-2479.

[12] Wan J and Grossman HB. Bladder carcinoma in patients age 40 years or younger. Cancer 1989;64(1):178-181.

[13] Gupta P, Jain M, Kapoor R, Muruganandham K, Srivastava A and Mandhani A. Impact of age and gender on the clinicopathological characteristics of bladder cancer. Indian J Urol 2009;25(2):207-210.

[14] Stanton ML, Xiao L, Czerniak BA and Guo CC. Urothelial tumors of the urinary bladder in young patients: a clinicopathologic study of 59 cases. Arch Pathol Lab Med 2013;137(10):1337-1341.

[15] Ploeg M, Aben KKH, Kiemeney LA.The present and future burden of Urinary bladder cancer in the world. World J Urol 2009, 27: 289-93

[16] Vaidya S, Lakhey M, KC S, Hirachand S. Urothelial tumors of the urinary bladder: A histopathological study of cystoscopic biopsies. J Nepal MedAssoc 2013; 52(191): 475-8.

[17] Shah A, Srivastava M, Samdurkar A, Sigdel G. Spectrum of Lesions in Urinary Bladder-A Histopathological Study. J Univ Coll Med Sci [Internet]. 2018 Dec. 3 [cited 2023 Jan. 26];6(2):24-7. Available from: https://www.nepjol.info/index.php/JUCMS/article/view/22473

[18] Preethamol S, Prasanth PS. Histomorphological study of urinary bladder biopsies- A retrospective study in a tertiary care centre, Kerala, India. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 2021Oct;Vol. 15 (Issue 10):39–43.

[19] Singhal P, Singhal M, Gupta M, Bansal R. Histopathological Spectrum of Neoplastic and Non Neoplastic Lesions of Urinary Bladder-A Retrospective Study. National Journal of Laboratory Medicine. 2021.

[20] Maxwell JP, Wang C, Wiebe N, Yilmaz A, Trpkov K. Long-term outcome of primary Papillary Urothelial Neoplasm of Low Malignant Potential (PUNLMP) including PUNLMP with inverted growth. Diagn Pathol. 2015 Mar 13;10:3. doi: 10.1186/s13000-015-0234-z. PMID: 25886613; PMCID: PMC4415259.

[21] Marks P, Soave A, Shariat SF, Fajkovic H, Fisch M, Rink M. Female with bladder cancer: what and why is there a difference? Transl Androl Urol. 2016 Oct;5(5):668-682. doi: 10.21037/tau.2016.03.22. PMID: 27785424; PMCID: PMC5071204.