ORIGINAL RESEARCH

A clinicopathological correlation of urinary bladder tumor in a tertiary care center of Rajasthan

[1]Dr. Jyotsana Khattri, [2]Dr. Yelda Vyas, [3]Dr. Anita Om Hare, [4]Dr. Madhvi Sanwelka

[1]Associate Professor, Department of Pathology, Govt Medical College, Kannauj Block Sai Ashrey, Kidwai Nagar, Kanpur, UP, India
[2]Associate Professor, Department of Pathology, NIMS&R, NH-11C, Delhi - Jaipur Expy, Shobha Nagar, Jaipur, Rajasthan, India
[3]Associate Professor, Department of Pathology, Government Medical College, Kannauj, India
[4]Assistant Professor, Department of Pathology, Jaipur Expy, Shobha Nagar, Jaipur, Rajasthan, India

Corresponding Author
Dr. Madhvi Sanwelka
Assistant Professor, Department of Pathology, Jaipur Expy, Shobha Nagar, Jaipur, Rajasthan, India
Email: Madhvisanwalka00@gmail.com

Received: 13 March, 2024 Accepted: 10 April, 2024

ABSTRACT

Introduction: Urinary bladder carcinoma is the second most common cancer of the genitourinary tract and ninth most common cancer worldwide. The aim of this study was to analyse the clinico pathological features of histologically confirmed urinary bladder carcinoma cases at a tertiary care hospital of Rajasthan.

Materials and method: This study was a retrospective cross-sectional study conducted from November 2019 to October 2021. We included 38 cases which came in two years.

Result: In our study most common age group was 61-70 years. Male: female is 12:1. Hematuria was the most common presentation (42%) followed by abdominal pain (18%), dysuria and retention of urine (16%), increase frequency of urination (13%), urethral stricture (11%) and fever (8%). Microscopic findings showed 2 non-neoplastic cases (6%), zero benign and 33 malignant cases (87%). In three cases tissue was crushed so diagnosis was inconclusive. Out 18 of malignant cases 32 cases were of papillary type and 1 case was of adenocarcinoma.

Conclusion: Urinary bladder carcinoma is diagnosed commonly at late stages in India as compared to western countries. Patients tend to ignore hematuria and other clinical symptoms at early stage of lesion. This situation can be improved by proper education, awareness among patients and adopting screening programmes in community. There is a need of other prospective studies to be done with higher number of patients in future for better understanding of the clinico-pathological features.

Keywords: TURBT, Cystoscopy, Bladder carcinoma, papillary carcinoma, urothelial carcinoma, low grade

INTRODUCTION

Urinary bladder carcinoma is the second most common cancer of the genitourinary tract and ninth most common cancer worldwide.[1]Both neoplastic and non-neoplastic lesions of urinary bladder are common. Almost 90% cases of primary urinary bladder tumor is accounted by urothelial carcinoma. [2]Non-neoplastic lesions include cystitis, urachal lesions, tuberculosis and malakoplakia. It is three to four times more common in males than in woman. [1] It's incidence and mortality increases with age and two-third cases occur in patients older than 65 years of age. [3] Risk factors associated with urinary bladder tumor are smoking, pelvic irradiation, cyclophosphamide, chronic cystitis, parasite infestation like schistosomal infection, aniline dyes and urachal remnants. [4-7]Most arise from base (posterior wall) and lateral wall of bladder. [8] Most common form of presentation is hematuria followed by symptoms associated with urinary tract infections like urgency, hesitancy, frequency and dysuria. Abdominal pain also can occur if there is obstruction of urethral orifice which leads to development of pyelonephritis or hydronephritis. [9] There are several grading system proposed over the years. All these are superseded by WHO (World Health Organization) or by International Society of Urological Pathology classification. [10]Most commonly used staging system

is that of American Joint Committee of Cancer. Noninvasive urothelial carcinoma which is carcinoma in situ is stage Tis. Noninvasive papillary carcinoma is designated as pTa, while invasion to lamina propria, muscularispropria, perivascular tissue and adjacent organs is designated as pT1,pT2,pT3,pT4 respectively. [11] Urothelial cancers are mostly found in pure form but can show divergent differentiation. [12]Of all the malignant bladder tumors, 5% are comprised of squamous cell carcinoma and adenocarcinoma are rare. [9] Radiographic imaging plays a significant role in bladder cancer staging. [13] Cystoscopy is the primary diagnostic method which is used in suspected cases of bladder tumor. It helps in direct visualization of bladder mass and bladder mucosa and taking biopsy from that suspected lesion. Transurethral resection of bladder tumor (TURBT) is diagnostic , prognostic and therapeutic procedure. [14] Cystoscopic/ TURBT evaluation and histopathological examination helps in making a proper diagnosis of bladder tumour. [15-17]nbz The aim of this study was to analyze the clinico pathological features of histologically confirmed urinary bladder carcinoma cases at a tertiary care hospital of Rajasthan.

MATERIALS AND METHODS

This study was a retrospective cross-sectional study conducted from November 2019 to October 2021. We included 38 cases which came in this two year. Histopathology requisition forms were retrieved and all the Hematoxilin and eosin (H&E) stain slides were reviewed. In each cases, detail clinical history including age, gender, type of specimen along with radiological investigation and cystoscopic or TURBT findings were noted in a prestructuredperforma. Ethical clearance from the institute was taken. A detailed histopathological examination of H&E stained slides were done under light microscope. Histologic grade, type, any invasion to lamina propria or muscularispropria, stage of tumor and any other changes were noted. Grading was done according to WHO/ISUP classification. The data was tabulated, analysed and compared with other similar studies.

RESULT

Thirty eight cases over a period of two years were studied. The age distribution of cases is elaborated in Table 1. In our study 34% patients were found in age group 61-70 years (most common), followed by 24% in 51-60 yrs, 18% in 71-80 yr., 10% 41-50 yr., had 8 % patients cases each in 21-30 years, 31-40 years and >80 years group, (table1). Male: female ratio was 12:1 (table 2).Hematuria was the most common presentation in 42% of patients followed by abdominal pain, dysuria and retention of urine, increase frequency of urination in, urethral stricture and fever as shown in table 3. 92% of the patients were smokers. The incidence of smokers was in males only. Maximum number of urinary bladder growth was on lateral wall in 61% patients followed by posterior wall in 26%, anterior wall in 9% and least was on medial wall in 4% patients. According to cystoscopic findings, 91% growths were polypoidal/papillary, 5% were solid, 3% were solid and 1% fungating. Microscopic findings showed 2 non-neoplastic cases (6%), 0 benign neoplastic cases and 33 malignant cases (83%). In three cases tissue was crushed so diagnosis was inconclusive. Out of 33 malignant cases 32 cases were of papillary type and 1 case was of adenocarcinoma (table 4). In the present study urothelial papillary carcinoma is found in 32 cases (97%), out of which pure papillary type was seen in 28 cases (87%) and differentiation was present in 4 cases (13%). Out of this differentiation, squamous was present in two cases , nesting was seen in one case and multi variant was seen in one case. One case (3%) of adenocarcinoma is seen (table 5). Out of 33malignant cases, invasion was present in 4 cases (12%). Only muscular invasion was found. No lamina propria invasion was seen (table 6).Figure 2 shows high grade papillary urothelial carcinoma. Figure 3 shows Papillary urothelial neoplasm of low malignant potential (PUNLMP) and figure 4 shows Low grade urinary papillary carcinoma.

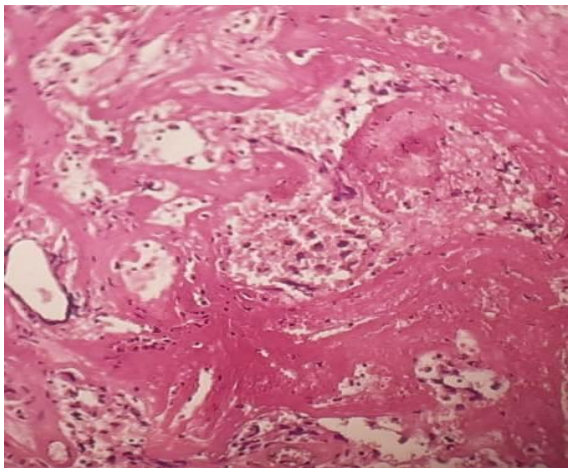

Figure 1(H&E 400x)- Microphotograph showing Squamous differention in urinary carcinoma

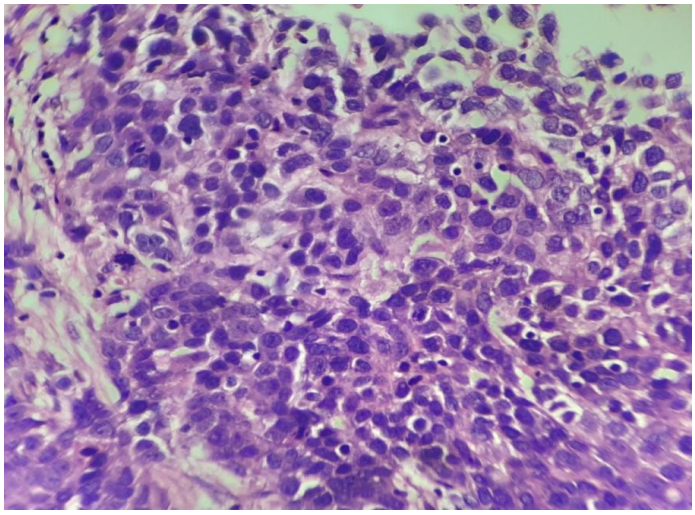

Figure 2(H&E 400x)- Microphotograph showing High grade urinary papillary carcinoma

Figure 3(H&E 400x)- Microphotograph showing Papillary urothelial neoplasm of low malignant potential (PUNLMP)

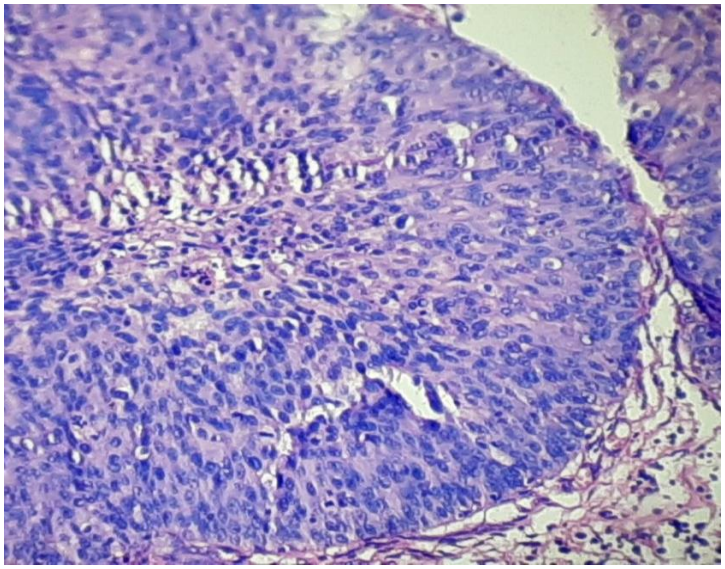

Figure 4(H&E 400x)- microphotograph showing Low grade urinary papillary carcinoma

Table: 1 Age distribution of cases

Age (years)	Cases (n=38)	Percentage
10-20	0	0
21-30	1	3
31-40	1	3
41-50	4	10
51-60	9	24
61-70	13	34
71-80	7	18
>80	3	8
Total	**38**	**100**

Table: 2 Distribution of cases according to gender

Gender	Cases (n=38)	Percentage
Male	35	92
Female	3	8
Total	**38**	**100**

Table:3 Distribution of cases according to clinical presentation

Clinical presentation	Cases (n=38)	Percentage
Hematuria	16	42
Urethral stricture	4	11
Frequency of urine	5	13
Dysuria	6	16
Fever	3	8
Retention of urine	6	16
Abdominal pain	7	18

Table: 4 Distribution of cases according to microscopic features

Microscopic Features	Number of cases (n=38)	%
Crushed tissue (no diagnosis possible)	**3**	7
Non-Neoplastic lesion		
Pesudosarcomatousmyofibroblastic Inflammatory lesion	1	3
Granulomatous cystitis	1	3
Neoplastic (Benign) Lesion	**0**	
Neoplastic (Malignant) Lesion		
High grade papillary urothelial carcinoma	17	44
Low grade papillary urothelial carcinoma	14	37
Moderately differentiated adenocarcinoma	1	3
Papillary urothelial neoplasm of low malignant potential	1	3
Total	**38**	**100**

Table 5:- Histological spectrum of urinary bladder carcinoma (n=33)

Histological type	Variant	Cases	%
Urothelial carcinoma		32	97
	a)Pure type	28	87
	b) Urothelial carcinoma with divergent variation	4	13
	• Squamous differentiation • Clear cell differentiation • Sarcomatoid differentiation • Nested pattern • Multiple variant	2 0 0 1 1	
Adenocarcinoma		1	3
Others		0	
Total		**33**	

Table 6:- Histological finding involving invasion (n=33)

Invasion	Number	%
Lamina propria	0	0
Muscular	4	12

DISCUSSION

Urinary bladder carcinoma is a global health problem. It is the 9th most common cancer and accounts for 3.9% of all carcinoma cases in India. In our study male: female ratio was 12:1. It is higher than studies done by Lim et al[18], Vidhya et al[19], Vaibhav et al[20], which showed 5:1, 4.5:1, 5.25:1 ratio respectively. Other studies like Mansi et al[21], Langer et al[22] , Matalka et al[23] , Gupta et al[24], Hasen et al[25] and Heng et al[26] showed similar male:female ratio like 7.5:1, 7.26:1, 9:1, 8.6:1, 2.58:1, 3.3:1 repectively. This high male:female ratio is related to increase incidence of smoking in males who also tend to work outside so they are more prone to industrial carcinogens like aniline dye. It was observed most common age group was 61-70 years in which 34% patients, followed by 51-60 years -24%, 71-80 years -18%, 41-50 years -10%, 21-30 years, 31-40 years and >80 years had 8 % cases each were found. This is similar to studies which showed higher cases in 5th,6th and 7th decade of life. [22-24, 27] Most common clinical symptoms was found to be hematuria in 42% patients , abdominal pain in 18%, dysuria and retention of urine in16%, increase frequency of urination in 13% , urethral stricture in 11% and fever in 8% cases which is similar to other studies.[24, 28-30] In our study the most common site where growth was found is lateral wall and posterior wall which is similar to other studies.[26, 31] Observation of commonest cancer being urothelial carcinoma type and non-neoplastic lesion findings were in accordance with other studies.[23,24,29,32,33,34,35,36] Our study shows high grade papillary urothelial carcinoma as commonest finding as it is seen in 44% of cases but only 37% cases showed Low grade papillary Urothelial carcinoma.. This is differ to studies which showed low grade as common carcimona. [21,27,37] But similar to some studies which showed high grade as commonest finding.[24, 26, 38] Study shows muscle invasion in 4 cases (15%) same as other studies. [20,23,27,30,39-41] Patients presented at late stage due to lack of awareness can be a reason for muscle invasion in these cases.

CONCLUSION

Urinary bladder carcinoma is a common malignancy which is diagnosed at late stages in India as compared to western countries. Patients tend to ignore hematuria and other clinical symptoms at early stage of lesion. This situation can be improved by proper education, awareness among patients and adopting screening programmes in community.

Most common age of presentation is 61-70 years. Non invasive high grade papillary urothelial carcinoma is the commonest presentation. Muscle invasion directly correlates with the grade of tumor.

This study is done in Rajasthan which forms a basis for further evaluation of bladder lesions. There is a need of other prospective studies in the state to be done with higher number of patients in future for better understanding of the clinico-pathological features.

Funding

None as stated by authors

Conflict of interest

None as stated by authors

REFERENCES

1. Parkin DM, Bray FI, Ferlay J, Pisani P. Global cancer statistics,2002. CA Cancer J Clin 2005; 55: 74-108.
2. Kumar MU, Yelikar BR. Spectrum of Lesions in Cystoscopic Bladder Biopsies – A Histopathological Study. Al Ameen J Med Sci 2012; 5(2):132 – 136.
3. World Cancer Report, WHO, 2003
4. American Cancer Society:DetailedGuide:Bladder Cancer, 2009.
5. Rehn L. Blasengeshwulstebcifuschin-arbeitern. Arch. Klin. Chir 1895 50: 588-600.
6. Ferguson AR. Associated bilharziasis and primary malignant disease of the urinary bladder with observation series of forty cases.J Path Bacteriol 1911; 16:76-94.
7. Nocks BN, Heney NM, Daly JJ. Primary adenocarcinoma of urinary bladder. Urology 1983; 21: 26–29.
8. Kumar V, Abbas AK, Fausto N(eds), Epstein JI.The lower urinary tract and male genital system. In:Robbins and Cotran Pathologic Basis of Disease.7th ed.Saunders 2004:1028-1033.
9. RosaiJ.Urinary tract. In: Rosai and Ackerman's Surgical Pathology.9th ed.Vol 1.Elsevier 2004: 1327-1340.ISBN: 978-81-8147-440-7.
10. Epstein JI, Amin MB, Reuter VR, Mosto FK. The World Health Organization/ International Society of Urological Pathology consensus classi□cation of urothelial (transitional cell) neoplasms of the urinary bladder. Bladder Consensus Conference Committee. Am J SurgPathol 1998; 22: 1435–48.
11. American Joint Committee on Cancer. AJCC cancer staging manual. Philadelphia: Lippincott-Raven, 1997: 241–3.
12. Chalasani V, Chin JL, Izawa JI. Histologic variants of urothelial bladder cancer and nonurothelial histology in bladder cancer. Can UrolAssoc J. 2009; 3(6 Suppl 4): S193–S198.
13. Jacobs LB, Lee CT, Montie JE. Bladder Cancer in 2010: How Far have We Come? CA Cancer J Clin 2010; 60: 244-272
14. Miladi M, Peyromaure M, Zerbib M, Saighi D, Debre B. The value of a second transurethral resection in evaluating patients with bladder tumours. EurUrol 2003; 43: 241–245.

15. SathyaMylsamy, Devaki Kanakasabapathi. Histopathological Study TURBT Biopsies of Urinary Bladder Cancer. Trends in Medical Research. 2017; 12:51-54.
16. Susmitha S, Patil GS, Patil SB. A Study on Histopathological Spectrum of Lesions in Urinary Bladder Specimens. Annals of Pathology and Laboratory Medicine. 2018; 5(5):489-494.
17. Goyal VK, Vyas SP, Kothari DC. Spectrum of Lesions in Urinary Bladder Biopsies: Histopathological Study. Int. J Dent Med Res. 2015; 1(6):42-46.
18. Lim M, Adsay NV, Grignon D, Osunkoya AO. Urothelial carcinoma with villoglandular differentiation: a study of 14 cases. Mod Pathol. 2009; 22(10):1280-6.
19. Vaidya S, Lakhey M, Sabira KC, Hirachand S. Urothelial tumors of the urinary bladder: A histopathological study of cystoscopic biopsies. J Nepal Med Assoc 2013; 52(191): 475-8.
20. GoyalVk, Vyas SP, Kothari DC. Spectrum of lesions in urinary bladder biopsies: histopathological study.Int J dent Med Res.2015;1(16):42-46.
21. Sharma M, Goswami KC, Gupta S. urinary baldder carcinoma: a clinicopathological study.IJSR.2017;6(6):198-200.
22. Langer B. An epidemiological study of malignancies in Jammu province: A thesis submitted to the Jammu University,2005.
23. Matalka I, Bani-Hani K, Shotar A, Bani Hani O, Bani-Hani I. Transitional cell carcinoma of the urinary bladder: a clinicopathological study. Singapore Med J. 2008; 49(10):790-4.
24. Gupta P, Jain M, Kapoor R, Muruganandham K, Srivastava A, Mandhani A. Impact of age and gender on the clinicopathological characteristics of bladder cancer.Indian J Urol 2009; 25(2): 207-10.
25. Hasan SM, Imtiaz F. Frequency of transitional cell carcinoma in local suburban population of Karachi. JLUMHS 2007; 83-85.
26. Cheng L, Pan CX, Yang XJ, Lopez-Beltran A, MacLennan GT. Small cell carcinoma of the urinary bladder: a clinicopathologic analysis of 64 patients. Cancer. 2004; 101(5):957-62.
27. Manjula K, KalyaniR,Kumar H. spectrum of lesions in urinary bladder biopsies: a histopathological study.Int J ClinDiagnol Pathol.2020;3(1):302-304.
28. Ray D, Mondal R, Achryya S, De S, Mondal S. A retrospective study of bladder cancer and the impact of age, sex and smoking habits with related clinicopathological correlations in the tribal population of Bankura, WB, India. OISR J Dent Med Sci 2013; 10(4): 29-32.
29. Mandong BM, Iya D, Obekpa PO and OrkarKS.Urologicaltumours in Jos University Teaching Hospital, Jos, Nigeria (A hospital based histopathological study).The Nigerian Journal of Surgical Research 2000; 2(3-4): 108-113.
30. Al-Bazzaz PH. Stage of urinary bladder cancer at first presentation. Saudi J Kidney DisTransplant. 2009;20(4): 628-31.
31. Sharma S, Nagar R, Singh K, Gupta S, Gupta CL. Transurethral resection in superficialurinary bladder carcinoma. JK Science 2000; 2(1): 33-36.
32. Nakao M, Nakagawa S, Toyoda K, Nukui M, Takada H, Ebisui K, Watanabe H. [Clinicostatistical study on bladder tumor] Nippon Hinyokika Gakkai Zasshi 1989; 80(7): 1037-44.
33. Badar F, Sattar A, Meerza F, Irfan N, Siddiqui N. Carcinoma of the urinary bladder in a tertiary care setting in a developing country. Asian Pac J Cancer Prev. 2009; 10(3): 449-52.
34. Young RH, Elbe JN. Non neoplastic disorders of the urinary bladder. In: Bostwick DG, Elbe JN, editors. Urologic surgical pathology. St Louis: Mosby; 1997. p. 167-212.
35. Sharma S, Nath P, Srivastava AN, Singh KM. Tumours of the male urogenital tract: A clinicopathologic study: J Indian Med Assoc; 1994; 92 (11): 357-60.
36. Srikousthubha, Sukesh CVR, Hingle S. Profile of lesions in cystoscopic bladder biopsies: A histopathological study. J ClinDiagn Res. 2013; 7(8):1609-1612.
37. Oosterhuis*et al*. Histological grading of papillary urothelial carcinoma ofthe bladder: prognostic value of the 1998 WHO/ISUPclassification system and comparison with conventional grading systems. J ClinPathol. 2002; 55:900-905.
38. Mamoon N, Iqbal MA, Jamal S,Luqman M. Urothelial neoplasia of urinary bladdercomparison of interobserver variability for WHO classification 1972 with WHO /ISUPConsensus Classi□cation1998. J Ayub Med CollAbbotabad 2006; 18(2).
39. Sciarra A, Matteis AD, Mariotti G, Voria G, Lucera R and Disilverio F. Histopathological aspects of transitional cell carcinoma of the bladder: analysis of 20 years experience. International journal of urology 2004; 11(7): 467-475.
40. Ahmed Z , Muzaffer S, Khan M , Kayani N, Pervez S, Husseini A S and Hasan SH Transitional cell carcinomas of the urinary bladder. A histopathological study. J Pak MedAssoc. Sep 2002;52(9): 396-8.
41. Shah RB, Montgomery JS, Montie JE, Kunju LP. Variant (divergent) histologic differentiation in urothelial carcinoma is under-recognized in community practice: impact of mandatory central pathology review at a large referral hospital. UrolOncol. 2013; 31(8):1650-5.