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Histopathological profile of urinary bladder malignant neoplasms at tertiary care hospital

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Abstract

Background: In the world, urinary bladder cancer ranks ninth in frequency and is the second most prevalent genitourinary tract cancer in men. Men are more likely than women to get bladder cancer (6% vs.2%), with 80% of patients being in the 50–80 age range. Ninety percent of bladder tumors are urothelial tumors, which range in type from benign papillomas to extremely aggressive anaplastic malignancies.

Cystoscopic bladder biopsy is the gold standard investigation for the diagnostic and prognostic assessment of patient.

Materials and Methods: Total of 14 cases of urinary bladder neoplasm (histologically proven) of patients admitted in SMIMER HOSPITAL, SURAT were studied over the period from January 2022 to December 2023 in department of pathology.

Results: Out of 14 cases of neoplastic lesions, majority were of high grade papillary urothelial carcinomas (50%) followed by low grade papillary urothelial carcinomas (38%) and papillary urothelial neoplasm of low-grade potential (PUNLUMP) (12%).

The most common age group was 61-70 years (50%).

Male preponderance (9 cases) was observed as compared to that of females.

Conclusion: High grade urothelial Carcinomas are the most common neoplastic lesion of urinary bladder. Muscle invasion and grading are very valuable prognostic factors.

Keywords: Urothelial carcinomas, cystoscopic bladder biopsy, transurethral resection of bladder tumor

Introduction

In the world, urinary bladder cancer ranks ninth in frequency and is the second most prevalent genitourinary tract cancer in men.

Men are more likely than women to get bladder cancer (6% vs.2%), with 80% of patients being in the 50–80 age range^[4].

Hematuria without pain is the most typical presenting complaint of bladder cancer. Dysuria, urgency, frequency, and weight loss are other symptoms^[2].

Risk factor for bladder cancer are smoking, chronic cystitis, pelvic irradiation, cyclophosphamide, genetic predisposition, occupational carcinogens from chemical industry, aniline dyes and urachal remnants^[3].

Mostly arises from the lateral wall or posterior wall of urinary bladder. Pattern of growth of urothelial tumors can be exophytic or endophytic or a combination of both and when exophytic can be papillary or solid/nodular^[3].

Ninety percent of bladder tumors are urothelial tumors, which range in type from benign papillomas to extremely aggressive anaplastic malignancies^[3].

Cystoscopic bladder biopsy is the gold standard investigation for the diagnostic and prognostic assessment of patient. Radiographic imaging is a significant part of bladder cancer staging. Bladder tumor transurethral resection is diagnostic, prognostic, and frequently therapeutic. The grade and stage of the tumor determines how bladder cancer is treated^[3].

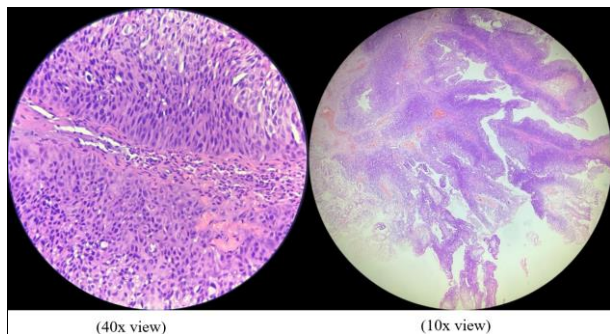


Fig 1: Low Grade Papillary Urothelial Carcinoma

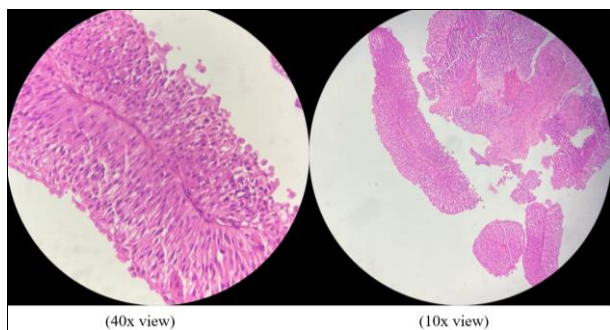


Fig 2: Papillary urothelial neoplasm of low malignant potential

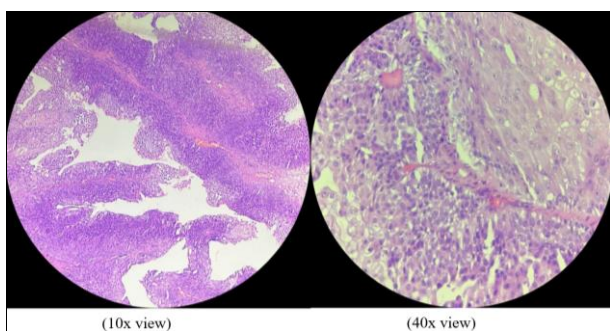


Fig 3: High Grade Papillary Urothelial Carcinoma

Material and Methods

A total of 14 cases of urinary bladder neoplasm (histologically proven) of patients admitted in SMIMER HOSPITAL, SURAT were studied over the period from January 2022 to December 2023 in department of pathology. A detailed history was taken. Findings were recorded in the proforma designated for the study. Macroscopically various parameters like size, configuration and consistency were noted.

Tissues were preserved in 10% formalin for 24 hours followed by standard processing and H & E staining.

All cases of urothelial carcinomas were graded histologically according to microscopic examination. (WHO

Classification-2016).

Inclusion Criteria: All cystoscopy biopsies and radical cystectomy specimens that turned out to be neoplastic were included in the study.

Exclusion Criteria

Autolyzed specimen and inadequate biopsies were excluded from the study.

Results

A total of 14 urinary bladder neoplastic lesions among wide range of 18 to 96 years were studied. The specimen included both cystoscopy bladder biopsy and TURBT.

Spectrum of clinical presentations and different neoplastic lesions were observed in this study.

1) Hematuria was the most common clinical symptom seen in 50% of cases followed by burning micturition in 40% of cases and pain in 10% of cases.

Table 1: Showing Age wise distribution of Urothelial Carcinoma cases

Age Group (years)	Total no. of cases	Percentage (%)
< 20	0	0%
21-30	1	7.25%
31-40	1	7.25%
41-50	1	7.25%
51-60	1	7.25%
61-70	6	43%
>70	4	28%
Total:	14	100%

2) Most common age group was 61-70 years (43% of patients) followed by > 70 years of age. Youngest age was 22 years old and oldest case was reported in 96 Age.

Table 2: Showing Gender wise distribution of Urothelial Carcinoma cases

Age Group	Neoplastic Lesions	
	Male	Female
< 20	0	0
21-30	0	1
31-40	1	0
41-50	1	0
51-60	1	0
61-70	3	3
>70	3	1
Total:	9	5

3) Among the study population 9 cases were male and 5 Cases were female with male to female ratio 2: 1. Thus male preponderance was observed among urothelial neoplastic lesions. (Table 2).

Table 3: Distribution of Cases according to microscopic Diagnosis

Microscopic Diagnosis	No. of cases	Percentage (%)
High Grade Papillary Urothelial Carcinoma	7	50%
Low Grade Papillary Urothelial Carcinoma	5	38%
Papillary Urothelial neoplasm of low malignant potential	2	12%
Papilloma	0	0%
Moderately differentiated SCC	0	0%
Others (Extra nodal NHL)	0	0%
Total	14	100%

4) As per Histological examination, our study shows increased prevalence of High Grade papillary urothelial carcinoma followed by low grade papillary urothelial carcinoma followed by low grade papillary urothelial

carcinoma and papillary urothelial neoplasm of low grade potential (PUNLUMP).

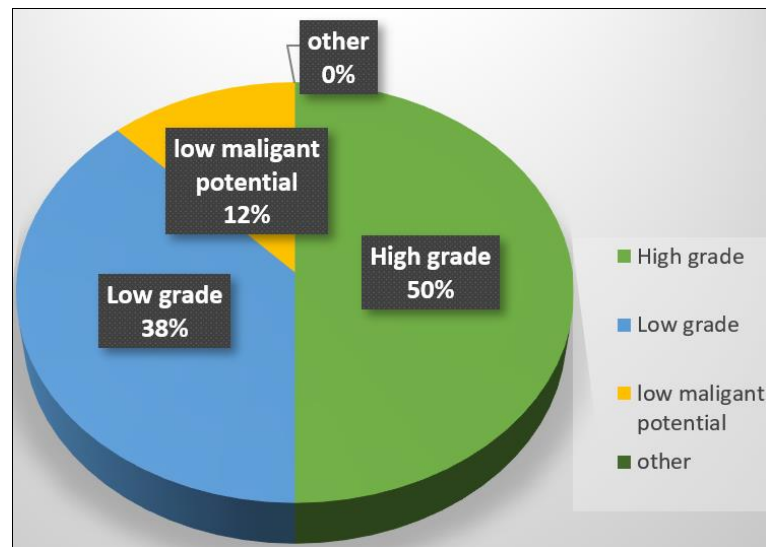


Fig 4: Shows increased prevalence of High Grade papillary urothelial carcinoma followed by low grade papillary urothelial carcinoma and papillary urothelial neoplasm of low grade potential (PUNLUMP)

5) According to invasion, Lamina propria invasion was present in 6 cases while muscularis invasion was absent in rest cases.

The detrusor muscle was absent in 4 cystoscopic biopsy. Hence, muscle invasion cannot be assessed.

Discussion

The urinary bladder and renal pelvis are more common sites for urothelial carcinomas, than the ureters and urethra. Bladder tumor diagnosis and monitoring is done by combination of cystoscopy, urine cytology and histopathology [1].

Various factors are associated with development of urinary bladder carcinoma including tobacco smoking, occupational exposure such as radiation, arsenic, aniline dye industry, aromatic amines, benzidine, cyclophosphamide & schistosoma haematobium, infestation [5].

The major risk factor for developing bladder cancer is cigarette smoking in a dose dependent for both sexes with four fold increased incidence compared to non smokers [7].

The high male:female ratio may be related to lower number of Indian women who smoke and who work outside home, especially in industries and get exposed to industrial carcinogens like aniline dyes [3]. Also urothelial carcinoma in female is due to use of smokeless tobacco like gutka, pan, khaini, saccharin & sugar coated fenal [4].

In our study most common age group was 61 to 70 years with 43% cases.

Our study was in concordance with studies performed by dipti *et al.* [5] and priti *et al.* [1] (61-70 years with 33% cases and 27% cases respectively.)

In advanced age there is accumulation of several cellular events that lead to cancer development which is enhanced by difficulty in emptying the bladder.

Among 14 cases, 64.3% (N=9) were male and 35.7% were females(N=5). Male: Female ratio was 2:1. Our study was in concordance with studies performed by Dipti *et al.* [5] and Dipika *et al.* [1] (Male to female ratio was of 3:1 and 3 to 4:1 respectively.)

Also detrusor muscle layer was absent in 4 cystoscopic

biopsies.

Important prognostic parameters are histological grading and staging of tumor, so it is very important to include muscle in cystoscopic biopsies to assess invasion.

Papillary carcinoma throughout have a particularly favorable prognosis as compared to an infiltrating and mixed growth pattern [7].

Conclusion

The risk of recurrence and disease progression does not solely depend on growth pattern and histological grading of tumor. It also depends on various factors such as size, multifocality, time of recurrence, prior intra vesicle therapy. Molecular classification of urothelial carcinoma may provide more precise stratification that could impact tumor behaviour, progression, prognosis, treatment and patient survival because NMIBC and MIBC shows heterogeneity by molecular study.

Identifying the extent of invasion of neoplasm by microscopic examination is important as the prognostic and therapeutic aspects are entirely different according to invasion. IHC is helpful in cases of diagnostic dilemma.

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Author's Contribution

Not available.

Conflict of Interest

Not available.

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