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Histopathological study of bladder lesions in a population of south Rajasthan

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Abstract

Background: Bladder cancer is one of the most common urological malignancies. Urinary bladder cancer is the 6th most common cancer worldwide and 9th most common cancer in India, accounting for 3.9% of cancer cases. It is more common in men than in women.**Aims and Objective**: 1) To study the histopathological features of various lesions in the bladder. 2) To study the frequency of different pathological lesions, particularly Papillary Urothelial Neoplasms in the urinary bladder.**Material and Methods**: The data from 185 patients were obtained from records of the American international institute of medical sciences, Udaipur. 170 bladder biopsy and 15 cystectomy specimen were analyzed.**Results**: Infiltrating urothelial carcinoma (38%)was the most common carcinoma found, followed by papillary urothelial neoplasm (20%) low malignant potential (PUNLMP), urothelial carcinoma high grade(18%), urothelial carcinoma low grade(13%), papilloma (15%) and mucinous adenocarcinoma (2%). Among infiltrating urothelial carcinoma, muscle invasion was the most common. The most common age group was 5th to 7th decades of life, and male to female ratio was 2.2:1. Hematuria was the most common symptom in both neoplastic and non-neoplastic cases.

Keywords: Age, gender, Infiltrating urothelial carcinoma, muscle invasion

Introduction

The lesions of the urinary bladder include both neoplastic and non-neoplastic. Among neoplastic lesions, bladder cancer is one of the most common lesions. Bladder cancer is one of the most common causes of mortality and morbidity in developing countries such as India.[1,2] Approximately 275,000 are diagnosed with this disease yearly, and about 108,000 out of those people die due to the disease. Urinary bladder cancer is the sixth most common cancer globally and the second most common malignancy of the genitourinary.[3] As per Indian Cancer Registry data in men, it is the 9th most common cancer accounting for 3.9% of all cancers.[4] The incidence rates of urinary bladder cancer per 100,000 males in Bangalore are 3.3, 5.8 in Delhi and 4.8 in Mumbai.[5]The incidence of bladder cancer is higher in males than females. Most of the cases present between the 5th to 8th decades of life.[6,7] This difference is due to differences in smoking habits and occupational exposures in the two sexes. Cigarette smoking, industrial exposure to acrylamide, Schistosoma hematobium, cyclophosphamide, artificial sweeteners and long-acting use of analgesics are the various risk factors responsible for urothelial carcinoma. The most common symptom is hematuria and is present in more than 75% of the patients. The most common tumor of the bladder is urothelial carcinoma, representing 90% of malignancies.[8]

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The remaining 10% comprise all other carcinomas, a small number of sarcomas and mixed tumours.An accurate diagnosis of urinary bladder lesions requires simultaneous data from urology, radiology and surgical pathology labs. The mainstays of contemporary bladder cancer diagnosis and treatment are physical examination, cystoscopic evaluation, and histopathological analysis of biopsy material.[9-11]Therefore, we aim to study the different types of bladder lesions and compare them with their clinical features to detect them early and as a mainstay for diagnosis.

Objectives

1) To study the histopathological features of various lesions in the bladder.
2) To study the frequency of different urothelial neoplasms in the urinary bladder according to WHO classification

Material and method

This retrospective study was conducted in the pathology department, American international institute of medical sciences, Udaipur, from January 2017 to July 2021. All the clinical data were retrieved from the requisition form received and the specimen from respective clinical departments. The material for the study comprised all Transurethral resection of bladder tumor and cystectomy specimens. All samples were fixed in 10% buffered formalin for 24 hours. Tissue was submitted for gross examination, and then whole tissue was processed, and slides were prepared using hematoxylin and eosin stains. Then, a detailed histopathological examination was done under microscopy (OLYMPUS CX-2i). The bladder tumors were graded and typed based on the WHO classification of Urothelial

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neoplasms. All tumors were evaluated using the following criteria – histopathological type and muscle invasion

Result

170 bladder biopsy and 15 cystectomy cases were included in our study over five years (From January 2017 to July 2021).

Table 1: Sex distribution

Sex	Neoplastic	Non-neoplastic
Male	118 (63.78%)	8 (4.32%)
Female	54 (29.18%)	5 (2.72%)
Total	172 (92.96%)	13 (7.02%)

Out of 185 cases, 172 cases were neoplastic, and 13 patients were non-neoplastic. Among neoplastic lesions, 63.78% were males and 29.18% females, and the ratio was 2.1:1

Table 2: Clinical symptoms distribution

Symptoms	Neoplastic (Total Cases 172)	Non-neoplastic (Total 13)
Hematuria	100	5
Dysuria	54	3
Frequency	34	2
Urgency	23	2
Pain abdomen	20	1

Hematuria was the most common clinical symptom followed by dysuria, frequency, urgency and pain abdomen in both neoplastic and non-neoplastic cases.

Table 3: Age distribution

Age	Neoplastic (Total Cases 172)	Non- Neoplastic (Total 13)
21-30	0	4
31-40	0	5
41-50	21	2
51-60	52	2
61-70	78	0
71-80	17	0
81-90	4	0

The most common age group for neoplastic and non-neoplastic lesions were the 6th and 3rd decades of life, respectively.

Table 4: Distribution of cases according to histopathological diagnosis of neoplastic lesion

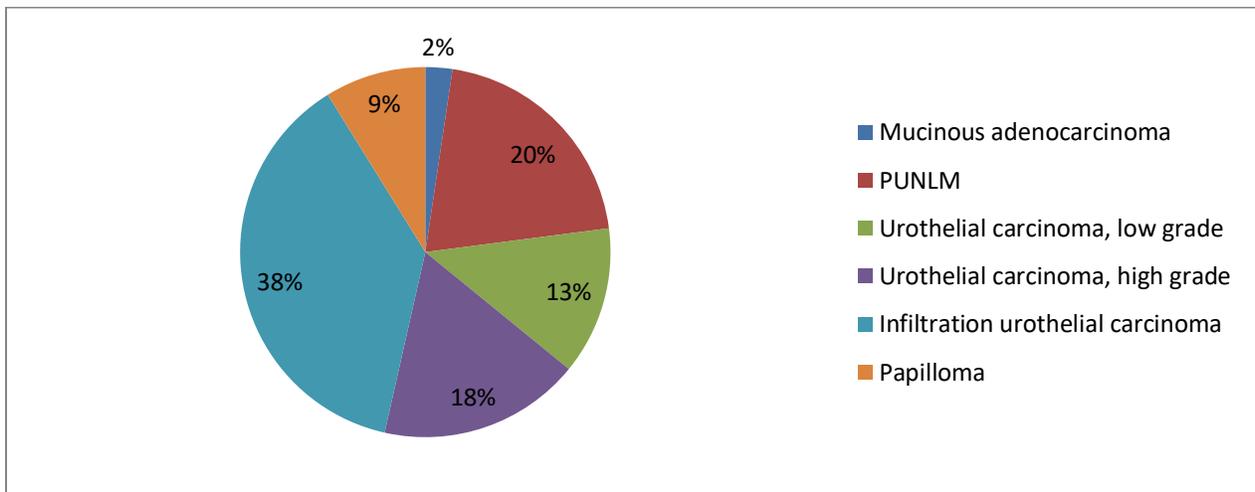| Diagnosis	Frequency	Percentage	Muscle invasion	Vascular invasion	Squamous differentiation
Mucinous adenocarcinoma	4	2%	0	0	0
PUNLMP	35	20%	0	0	0
Urothelial carcinoma, low grade	24	13%	0	0	0
Urothelial carcinoma, high grade	30	18%	0	0	0
Inflitrating urothelial carcinoma	64	38%	39	10	12
Papilloma	15	9%	0	0	0

Fig 1: Distribution of Neoplastic Bladder lesions

In our study, 172 cases were neoplastic. Infiltrating urothelial carcinoma (38%)was the most common carcinoma found, followed by papillary urothelial neoplasm of low malignant potential (PUNLM) (20%), urothelial carcinoma ,high grade(18%), urothelial carcinoma, low grade(13%), papilloma (9%) and mucinous adenocarcinoma (2%). Muscle invasion was present in 60.93% infiltrating urothelial carcinoma.
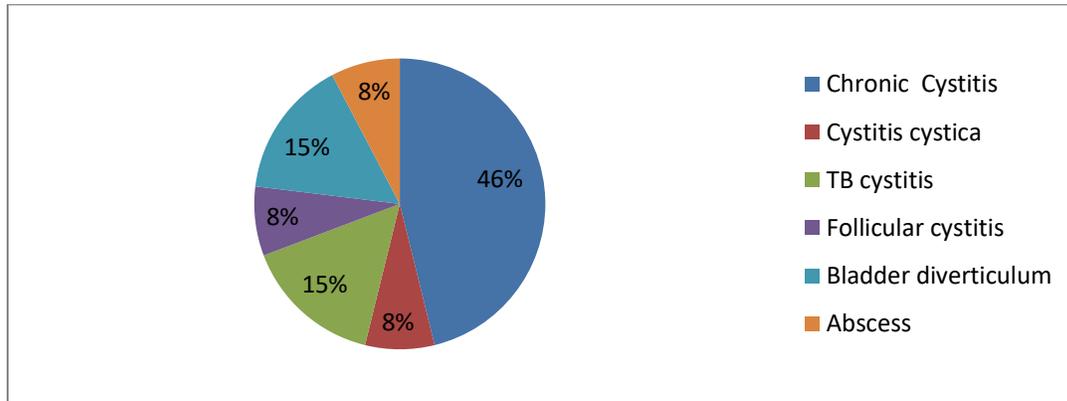

Fig 2: Distribution of various Non-neoplastic bladder lesions

Among non-neoplastic lesions, the most common diagnosis was chronic cystitis(46%), followed by tubercular cystitis, bladder diverticulum, abscess, cystitis cystic and follicular cystitis.
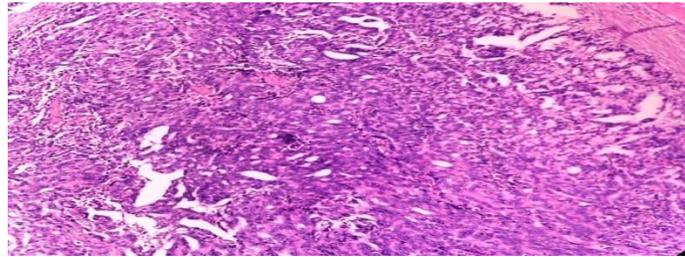

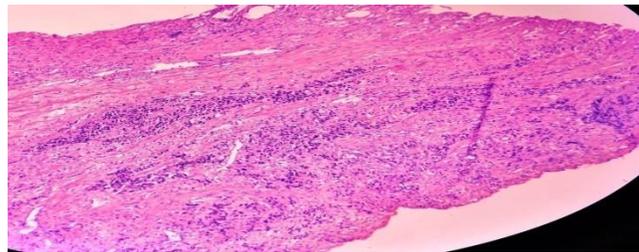**Fig 3**: **Infiltrating urothelial carcinoma**

Fig 4: Muscle invasion of urothelial carcinoma

Discussion

Urinary bladder lesions, especially neoplastic lesions, are responsible for significant morbidity and mortality. With approximately 260,000 new cases worldwide, tumors of the urinary system contribute significantly to the overall human cancer burden. Progress in the early detection and treatment of bladder cancer has improved the prognosis with a five-year survival rate of 60-80%. The present study mainly highlights the histopathological spectrum of bladder lesions. In recent years cystoscopy and histopathological examination have been the primary diagnostic tool for the diagnosis of bladder lesions.

In our study, the overall male to female ratio was 2.2:1. Among neoplastic lesions, the male to female ratio was 2.18:1. Similar findings were observed in a study done by Ploeg et al.(4:1),[12] Goyal et al. (5.25:1),[13] and Vaidya et al.(5:1)[9] where the incidence was more in males in comparison to females. The present study's most common age group for a neoplastic lesion was 61-70 years, followed by 15-60 years. Similar findings were observed in the other studies done by Vaidya et al.,[9]Shah et al.,[14] Islam et al.,[15] and Shah et al.[16] Most of the patients in the present study had multiple symptoms, and the most common was hematuria followed by increased urinary frequency in both neoplastic and non-neoplastic lesions. In our study, out of 185 cases, 172 cases were from the neoplastic category. Among them, infiltrating urothelial carcinoma(38%) was the most common carcinoma, Papillary urothelial carcinoma, high grade (18%) and papillary urothelial carcinoma, low grade(13%). Similar findings were observed in Vaidya et al.,[9] and Shah et al.[14] Muscle invasion was seen in 60.93% infiltrating urothelial carcinoma cases. Laishram et al.,[4] Vaidya et al.,[9] and Gupta et al.[17]   studies showed muscle invasion in 42.1 %, 35.8% and 26%, respectively. This increased prevalence of infiltrating urothelial carcinoma in our study may be due to lack of awareness among the people, low socio-economic status and poor hygienic practices.

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The 4 cases of adenocarcinoma were observed in the present study, which accounts for 2% of all malignant urinary bladder tumours. Various studies have also shown that adenocarcinoma is a rare variant of urinary bladder carcinoma. PUNLMP is a urothelial lesion that biologically carries a low risk of progression, according to some studies. Many of these patients had tumor recurrence (up to 60%), and they often presented with higher-grade tumor and recurrence. Therefore, it is essential to recognize these tumors and alert the clinician for timely treatment. In our study, 35 cases (20%) of papillary urothelial neoplasm of low malignant potential were observed. In the study conducted by Shah et al.,[14] Shims et al.,[18] and Vaidya et al.[9] PUNLMP cases constituted 5.55 %, 27.3% and 4.01%, respectively. In our study, we observed 46% non-neoplastic case belongs to the chronic cystitis group followed by 15% cases of tubercular cystitis, and 8% cases of follicular cystitis. Similar findings were observed in other studies.

Conclusion
This study has revealed that the bladder tumors are the most common lesions seen in the received specimens of bladder tissue, and infiltration urothelial carcinoma was the predominant tumour type. Since Bladder lesion pose significant morbidity worldwide, it is vital to diagnose bladder carcinoma early.

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