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Histopathological spectrum of urinary bladder lesions in a tertiary level hospital

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Abstract
Introduction: Urinary bladder encompasses a wide variety of lesions, both neoplastic and nonneoplastic responsible for significant morbidity and mortality throughout the world. All bladder lesions require biopsy because of their lack of distinctive features. Urinary bladder cancer is the 9th most common cancer worldwide accounting for 6% and 2% of the cancer incidence in men and women, respectively.90% of the bladder tumors are of urothelial origin. Cystoscopic examination has a limited role in staging process for which transurethral resection (TURBT) of visible tumor down to the base is required which can accurately assess depth of tumor invasion. This study is aimed to study the different spectrum of urinary bladder lesions in tertiary level hospital.
Aim: To analyse the histopathological spectrum of bladder specimens with neoplastic and nonneoplastic lesions, and categorising them according to recent 2022 World Health Organisation (WHO) classification.
Material and method: A total of 86 cases of urinary bladder biopsy of patient admitted in civil hospital were studied over the period from January-2022 to June-2024 in department of pathology.
The cystoscopic biopsies and TURBT biopsies were fixed in 10% formalin solution. The specimens were subjected to standard paraffin embedding and hematoxylin and eosin staining.
Results: Maximum number of patients are in age group 61-70 years. Males are more frequently affected as compared to female.
Conclusion: A variety of urinary bladder lesions are commonly encountered in our day to day practice. In our study, the bladder lesions were commonly seen in age group of 61-70 years of life with overall a male preponderance. Also, this study, documented a high frequency of invasive than non invasive type of urothelial neoplasm. Invasive urothelial carcinoma, high grade constituted the commonest of urothelial tumors.

Keywords: Urinary bladder, lesions, smoking, urothelial carcinoma

Introduction
The lesions of urinary bladder including both non-neoplastic and neoplastic pose a common disease in the general populations and are often disabling. Tumors of the bladder are an important source of both morbidity and mortality. Urinary bladder cancer is the 9th most common cancer worldwide accounting for 6% and 2% of the cancer incidence in the men and women respectively. The majority of these lesions occurred in patients over the age of 50 years. The most common non-neoplastic lesion is cystitis. However, common neoplastic lesion is invasive urothelial carcinoma among primary tumors. There are various techniques like ultrasonography, computed tomography, magnetic resonance imaging for detection of tumor. But, the direct cystoscopy of the urinary bladder lesions and transurethral resection of the tumor deep to base with histopathology leads to accurate assessment of the depth of tumor invasion and management of the cases. Despite the various techniques in diagnosis of the tumor as well as intra-vesical and systemic therapies, patients with muscle invasive carcinoma experienced a bad prognostic outcomes. However, the prognosis and clinical significance of bladder tumors depends upon their histological grade, differentiation and the depth of invasion. This study is aimed to study the different spectrum of urinary bladder lesions in tertiary level hospital.Amongst bladder tumors, urothelial carcinoma is a common malignant tumor of urinary bladder and comprise of 90% of the primary tumor. Men are affected more often than women. Bladder carcinoma is the second most common malignancy of the genitourinary tract after prostate cancer in males and represent a heterogeneous group of neoplasm. These neoplasm of bladder create biologic, clinical, diagnostic and therapeutic challenges to both urologist and pathologist.

Aim: To analyse the histopathological spectrum of bladder specimens with neoplastic and nonneoplastic lesions, and categorising them according to recent 2022 World Health Organisation (WHO) classification.

Material and method: 86 patients diagnosed with urinary bladder neoplasm in Civil Hospital, Ahmedabad during January 2022 to June 2024 were included in study. Biopsy are taken by surgeons and specimen send to Histopathology Department. Specimen was Fixed overnight with 10% formalin, Cut and Processed in tissue processor and embedded in paraffin wax. The block was made and then it cut in thin sections on Rotatory Microtome and mounted on Slide. The slide is stained with H&E stain and mounted with DPX and coverslip. Then observe under Microscope.

Inclusion criteria
All neoplastic cystoscopic biopsies and radical cystectomy specimens that turned out to be neoplastic were included in the study.

Exclusion criteria: Inadequate biopsies and Autolysed specimen were excluded from the study.

Result
Among the total of 86 cases, predominant of TURBT specimens More TURBT specimens from the patients aged 61-70 years i.e. 25 (33.72%), followed by 51-60 years 23(30.23%) and least from the age group 81-90years 3(3.79%), 82.5 (%) were received from male and remaining were from female patient.

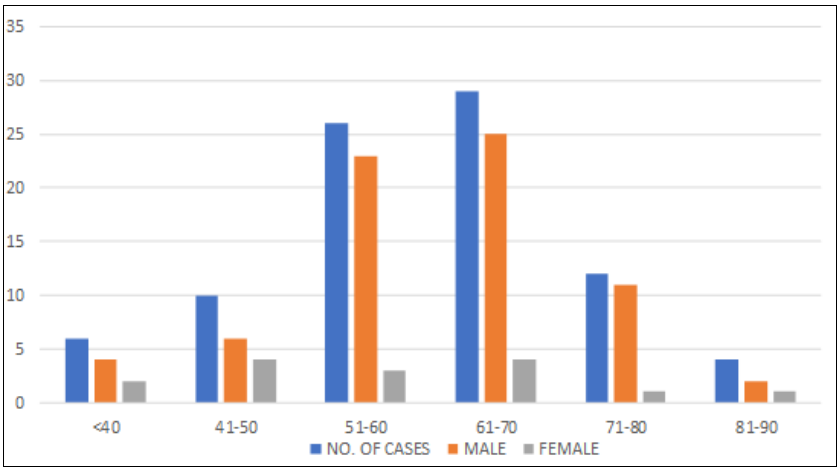

Fig 1: Cases of urinary bladder carcinoma in male and female

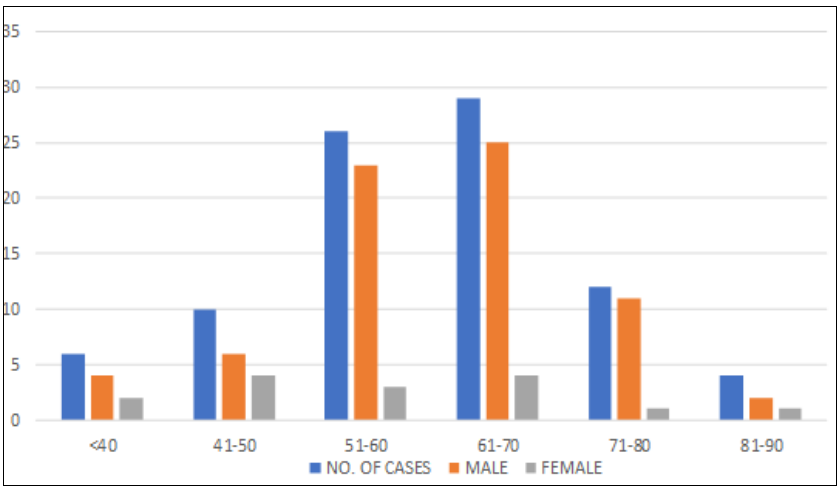

Fig 2: Invasive high grade neoplasm (29.06%) was the most common diagnosis, followed by invasive low grade neoplasm (17.44%). The least common diagnosis made were urothelial carcinoma in situ, urothelial papilloma and adenocarcinoma

Table 1: Distribution of Histological Diagnoses in Urological Specimens

Histological diagnosis	Frequency	Percentage
Cystitis cystica	5	5.81
Others	2	2.32
Non-invasive urothelial tumor		
Urothelial papilloma	3	3.48
Papillary urothelial neoplasm of low malignant potential	7	8.13
Non invasive papillary urothelial carcinoma, low grade	16	18.60
Non invasive papillary urothelial carcinoma, high grade	7	8.13
Urothelial carcinoma *in situ*	1	1.16
Invasive high grade neoplasm	25	29.06
Invasive low grade neoplasm	15	17.44
ADENOCARCINOMA	5	5.81

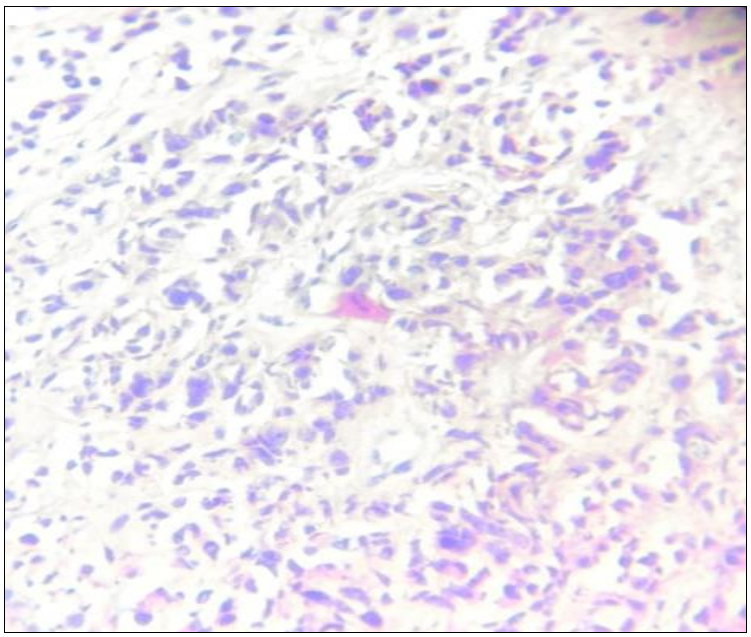

Fig 3: Poorly differentiated urothelial carcinoma (H & E)

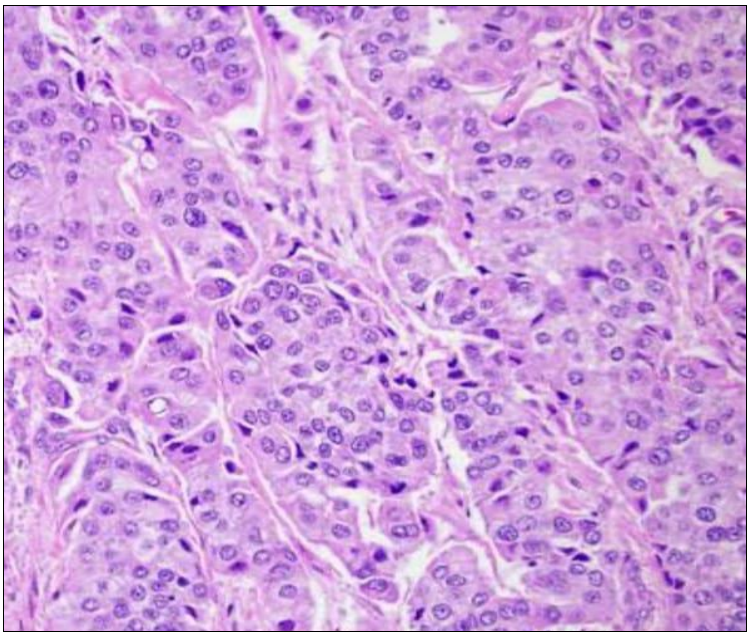

Fig 4: Invasive urothelial carcinoma (H & E)

Discussion

In bladder cancer histomorphology is the most powerful tool to predict the risk of recurrence, progression and therapeutic response. In most of the lesions, diagnosis is fairly easy, occasionally, it can pose diagnostic challenges. Therefore, pathologist play an important role in not just labelling the diagnosis but also to give additional information that can have an impact on the treatment.

The histopathological diagnosis helps to differentiate benign and malignant urothelial lesions based on morphological features. Since every histological variant has unique characteristics based on metastatic potential, susceptibility to radiation or chemotherapy, histopathology can play vital role in its diagnosis and management.

The present study showed male preponderance for the urinary bladder lesions 71(82.55%) and similar type of results were seen in study done by Roshed *et al*. and Lashiram *et al*. This may be due to occupational exposure and habitual facts. The cigarette smoking, industrial exposure to acrylamine in male leads to higher chance of bladder tumor in them. The urinary bladder lesions were commonly seen in age group 61-70 of life. Similar to our results, the study done by Paudel *et al*. also show similar age range of 60-80 years. The bladder tumors are thought to be commonly found in elderly population because of treatment related toxicity secondary to medical comorbidities with poor immune response.

In our study, the urinary bladder lesions were found to be neoplastic accounting 94.18% where as non-neoplastic lesions account 8.13%. Invasive high grade neoplasm was the most common diagnosis, followed by invasive low grade neoplasm. The least common diagnosis were made carcinoma *in situ* and urothelial papilloma. The study done by Kriti Piya *et al*. also found invasive high grade neoplasm to be the common findings in their study. Discordance to ours, the study done by Thapa *et al*. and Mainali *et al*. showed the predominance of low grade urothelial neoplasm accounting for 50.91% and 49.2% respectively.

The other neoplastic lesions encountered were benign comprising of Papillary Urothelial Neoplasm of Low Malignant Potential (PUNLMP) (8.13), Urothelial Papilloma (3.48) and adenocarcinoma (5.81) were noted in the present study. The study done by Thapa *et al*. also showed low frequency of benign urothelial lesions.

In our study, the frequently encountered non-neoplastic lesions cystitis cystica. The study done by Shah *et al*.1 showed various forms of cystitis to be common non neoplastic lesions.

Conclusion

A variety of urinary bladder lesions are commonly encountered in our day to day practice. Urinary bladder biopsy is one of the most common biopsies in general population. In our study, the bladder lesions were commonly seen in age group of 61-70 years of life with overall a male preponderance. Also, this study, documented a high frequency of invasive than non invasive type of urothelial neoplasm. Invasive urothelial carcinoma, high grade constituted the commonest of urothelial tumors.

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