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STUDY OF HISTOPATHOLOGICAL SPECTRUM OF URINARY BLADDER LESION BIOPSIES IN AJMER REGION

Pathology

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ABSTRACT

Urinary bladder lesions, both non-neoplastic and neoplastic are quite common. Neoplasms of bladder pose biologic and clinical challenges. Histopathological analysis of cystoscopic bladder biopsy is the mainstay for diagnosis. The aim of this study was to describe the histopathological spectrum of urinary bladder lesions, their frequency, age wise and sex wise distribution. 140 cases of urinary bladder lesion biopsies were included which were processed and stained according to standard protocol. Out of total 140 cases, four (2.86%) were non-neoplastic and 136 (97.14%) neoplastic cases. In neoplastic cases, High Grade Papillary Urothelial Carcinoma (90 cases, 64.29%) was commonest. Most common affected age group was 61-70 years (45 cases, 32.14%). Male to female ratio was 5.36:1. In Conclusion, Urinary bladder lesions are heterogeneous. Besides, other investigations, cystoscopic bladder biopsies help in the early diagnosis and treatment of various bladder lesions.

KEYWORDS

Urinary Bladder, Urothelial Carcinoma, Neoplastic, Cystoscopic.

INTRODUCTION:

Urinary bladder lesions, both non-neoplastic and neoplastic are quite common. The non-neoplastic lesions especially cystitis constitute an important source of clinical sign and symptoms. Other common benign lesions are malakoplakia, urachal lesions and tuberculosis. These diseases are more disabling than lethal. Neoplastic lesions are responsible for significant morbidity and mortality.[1]

Majority of urinary tract tumors are epithelial in origin.[2] Urothelial carcinoma is the commonest type accounting for 90% of all primary tumors of the bladder.[1] Urothelial carcinomas are also seen at other sites such as renal pelvis, ureters, urethra in the decreasing order of frequency only next to urinary bladder.[3] Urinary bladder cancer is the sixth most common cancer worldwide and the second most common malignancy of the genitourinary tract after prostate cancer, and represents a heterogeneous group of neoplasms. The natural history of these bladder cancers is that of recurrence and progression to higher grades and stages.[4]

Bladder neoplasms account for 6% and 2% of the cancer incidence in men and women respectively. Most cases present in patients over the age of 50 years.[5]

Histopathologically depending on the pattern of growth, urothelial bladder carcinomas are classified in flat and papillary type. Most of tumors are papillary type. Only carcinoma in- situ and some invasive histological forms having a flat pattern.[6,7,8,9] The papillary equivalent of flat in situ carcinoma is the high grade noninvasive papillary urothelial carcinoma.[6]

For bladder cancer, the 2016 WHO classification continues to recommend the 1997 International Society of Urological Pathology grading classification. Newly described or better defined noninvasive urothelial lesions includes urothelial dysplasia and urothelial proliferation of uncertain malignant potential, which is frequently identified in patients with a prior history of urothelial carcinoma. Invasive urothelial carcinoma with divergent differentiation refers to tumours with some percentage of "usual type" urothelial carcinoma combined with other morphologies. Pathologists should mention the percentage of divergent histologies in the pathology report.[10]

Bladder tumors classically produce painless hematuria. This is their dominant and sometimes only clinical manifestation. Frequency, urgency, and dysuria occasionally accompany the hematuria.[11]

The association between some of the etiological agent in evolution of bladder cancer is well established. They can be either genetic abnormality or external risk factors like cigarette smoking, occupational carcinogens from chemical industry, schistosoma hematobium infection in endemic areas, use of artificial sweeteners, patients on long term use of cyclophosphamide and analgesics and patients receiving radiation therapy for uterine cancers.

The incidence of Carcinoma of the bladder is higher in men than in women, at a ratio of 3 to 4:1. This difference is probably accounted by differences in smoking habits and occupational exposures in the two sexes.[1, 11, 12] Genetic factors such as null GSTM-1(Glutathione-S transferase) and slow NAT-2(N- acetyl transferase) polymorphism increases the risk of bladder cancer.[13]

Conventional cystoscopy is the important diagnostic tool for investigating bladder abnormalities. Cystoscopy and bladder biopsies together are important for early diagnosis and treatment of various bladder lesions.[1]

Hence this study comprises of description of incidence of various lesions of urinary bladder .This will be studied in association with clinical manifestation, investigation finding and morphologic changes. The aim of this study is to describe the histopathological spectrum of various lesions in the urinary bladder biopsies and to analyse the incidence of various inflammatory, benign, premalignant, and malignant lesions.

Material And Methods:

Undertaking and permission was obtained from the principal and controller for conducting the study and collecting information. The retrospective and prospective 5-year study was carried out from January, 2014 to December, 2018 in the Department of Pathology, J.L.N. Medical College and Associated Group of Hospitals, Ajmer. Total 140 cases of urinary bladder lesion biopsies were included.

The material for study comprises of Biopsy from surgically removed tumors or lesions / Transurethral resection of urinary bladder tissue received in the department of Pathology.

All the received specimens were fixed in 10% neutral buffered formalin. After the fixation, gross examination was done which includes its size, shape, weight, consistency and appearance of cut surface especially pertaining to areas of haemorrhage, necrosis. Multiple sections were taken from representative areas. Biopsy material was embedded completely.

Sections were dehydrated in 70% ethanol followed by 95% and 100% ethanol, cleared in xylene and embedded in paraffin wax. Paraffin blocks were made and tissue bits were cut of 3-5 microns in thickness. The diagnosis was confirmed by histopathology with Hematoxylin and Eosin Stain. Special stains and immunohistochemistry were done whenever needed.

RESULTS:

This study was done for retrospective and prospective histopathological evaluation of 140 cases in the urinary bladder biopsies.

In this study out of 140 cases, inflammatory lesions were 4 (2.85%) while neoplastic lesions were present in 136 (97.14%) patients. Most common microscopic diagnosis was High grade papillary urothelial carcinoma, 90 cases (64.29%) [Figure 1] while least common microscopic diagnosis was moderately differentiated squamous cell carcinoma Papilloma and Malakoplakia 1 case (0.72%) each.

Other microscopic diagnosis were also found like low grade papillary urothelial carcinoma 30 cases (21.42%)[Figure 2], Papillary urothelial neoplasm of low malignant potential 14 cases (10%) [Figure 3] and chronic non-specific cystitis 3 cases (2.13%). (Table 1)

Table 1: Distribution Of Cases According To Microscopic Diagnosis

Type of lesions	Microscopic Diagnosis	No. of cases	Percentage (%)
Inflammatory Lesions	Chronic non-specific cystitis	3	2.13
	Malakoplakia	1	0.72
Neoplasticlesions	Papilloma	1	0.72
	High grade papillary urothelial carcinoma	90	64.29
	Low grade papillary urothelial carcinoma	30	21.42
	Moderately differentiated squamous cell Carcinoma	1	0.72
	Papillary urothelial neoplasm of low malignant potential	14	10.00
Total		**140**	**100**

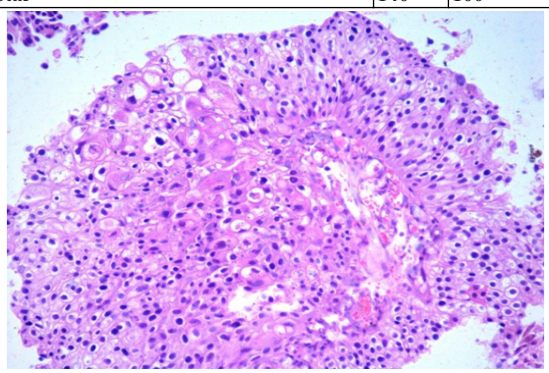

Figure 1 - High-grade papillary carcinoma display marked cytologic and architectural atypia. (H&E 200X).

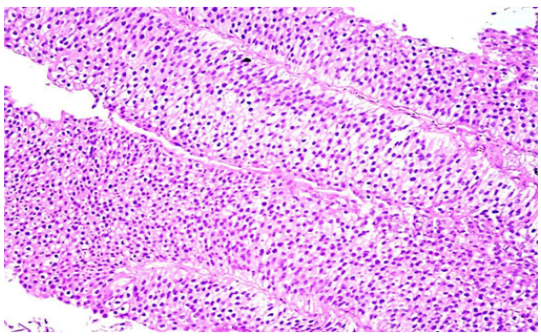

Figure 2- Low grade papillary urothelial carcinoma showing papillae mild pleomorphism of cells with minimal loss of polarity (H&E 200X).

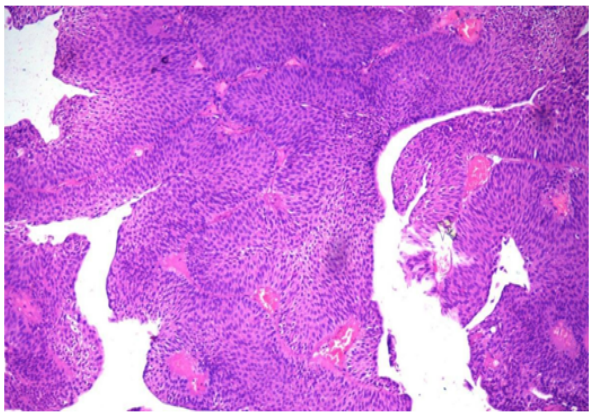

Figure 3 - Papillary Urothelial Neoplasm of Low Malignant Potential showing cell polarity identical to normal (H & E, 100X).

Most common affected age group was 61-70 years where 45 (32.14%) patients were found followed by 51-60 years 36 (25.71%), >70 years 28 (20%), 41-50 years 16 (11.42%), and least common age group was < 40 years 15 (10.56%).Male to female ratio was 5.36:1.

Most common clinical feature was Haematuria 129 cases (92.14%) followed by abdominal pain in 72 cases (51.42%) , Increased Frequency in 42 cases (30.0%) and Dysuria was present in 51 cases (36.42%) (Table 2)

Table 2: Distribution Of Cases According To Clinical Features

Clinical Features	Present		Absent	
	No.	%	No.	%
Abdominal Pain	72	51.42	68	48.57
Frequency	42	30.0	98	70.0
Haematuria	129	92.14	11	7.86
Dysuria	51	36.42	89	63.58

According to cystoscopic findings, 92 (65.71%) patients had papillary mass, 36 (25.71%) patients had solid mass, 6 (4.28%) patients had diffuse thickening and 3 (2.14%) patients each had ulcer and fungating mass.(Table 3)

Table 3: Distribution Of Cases According To Cystoscopic Findings

Cystoscopic Findings	No. of cases	Percentage (%)
Diffuse thickening	6	4.28
Fungating Mass	3	2.14
Papillary Mass	92	65.71
Solid Mass	36	25.71
Ulcer	3	2.14
Total	**140**	**100**

In the present study, among the inflammatory lesions, for chronic non-specific cystitis the male and female percentage is 66.67% and 33.33% respectively. In both Malakoplakia and moderately differentiated SCC only one case detected which were males. Among the neoplastic lesions, most common diagnosis of high grade papillary urothelial carcinoma has a male preponderance of 86.67% with the female percentage of 13.33%.

The diagnosis of low grade papillary urothelial carcinoma and papillary urothelial neoplasm of low malignant potential were common in males with respective percentage of 76.67 % and 92.86% and female cases were 23.33% and 7.14% respectively. A single case of papilloma was detected which was female.

Most cases of inflammatory lesions were diagnosed in age below 40 years (3 cases, 75%). Among the neoplastic lesions, most cases were diagnosed in 61-70 years age group. Most cases of High grade papillary urothelial carcinoma, Low grade papillary urothelial carcinoma, Papillary urothelial neoplasm of low malignant potential, and Moderately differentiated SCC were detected in 61-70 years age group (26, 12, 6, 1 respectively). A single case of papilloma was detected which was in 51-60 year age group.

Lamina Propria invasion was seen in 84 cases (70%) while muscularis propria invasion was present in 76 (63.33%) of patients.

Differentiation in Urothelial carcinoma was present in five cases (4.16%) and out of them Glandular differentiation was present in one case (0.83%), nested differentiation was present in one case (0.83%) and squamous differentiation was present in three cases (2.5%) while remaining one hundred fifteen cases (95.84%) patients had no differentiation.

DISCUSSION:

A total 140 cases of urinary bladder lesions biopsies received in Department of Pathology were included in this study.

Review of history and clinical examination along with specific investigation like cystoscopy, transurethral resection of bladder tumor biopsy were done in nearly all cases.

In our study, Transitional cell carcinoma 88.23% and Squamous cell carcinoma (0.74 %), which were correlated with study of Goyal VK et al 14 and Shaaban et al 15 which showed in their study Transitional cell carcinoma (74%) & Squamous cell carcinoma (20%), but increased number of squamous carcinoma in their study, was due to higher schistosomiasis infection.One case (0.72%) of Papilloma was diagnosed which was nearly correlated with Vaidya et al [16] (3.7%) and Shah A et al [17] (2.78%).One case (0.72%) of malacoplakia was diagnosed which was nearly correlated with Mahesh Kumar U et al [1] (1.66%) and Goyal VK et al [14] (3.0%) but not correlated with Vaidya et al [16] (14.95%). Small number of cases of chronic non specific cystitis was due to unawareness of symptoms by patient and biopsy was sent in most of the cases only for carcinoma by clinician.

Commonest age group affected was 61-70 years with 32.14% cases which was correlated with Goyal VK et al[14] and Vaidya et al [16]. In this study, mean age of presentation was 60.21 years (range 3-86) which was correlated with Matalka et al[12] and Goyal VK et al.[14]

In our study ,the male to female ratio was 5.36:1 which was correlated with Lim et al [18], Goyal VK et al[14] and Vaidya et al [16].

Haematuria was the most common clinical symptoms (129 cases, 92.14%) followed by Abdominal pain 72 cases (51.42%), Increased frequency 42 cases (30.0%) and Dysuria 51 cases (36.42%) which was correlated with the study of Shah A et al [17], Goyal VK et al. [14]

In our study muscle invasion was seen in 76 cases (63.33%) out 120 cases of urothelial carcinoma which was correlated with Shah RB et al [17] and Goyal VK et al [14] and lamina propria invasion was seen in 84 (70%) cases out 120 cases of urothelial carcinoma which was approximately correlated with Goyal VK et al [14] and Sathya et al. [19]

In our study,Urothelial carcinoma Squamous differentiation 3 cases (2.5%), glandular differentiation 1 case (0.83%), nested differentiation 1(0.83%) which was nearly correlated with study of Billis et al. [20]

CONCLUSION:

Urinary bladder lesions are heterogeneous. Besides, other investigations, cystoscopic bladder biopsies help in the early diagnosis and treatment of various bladder lesions. Pathological grade and muscle invasion are the most valuable prognostic predictors of survival. With the help of accurate Pathological diagnosis and keeping in view about the changing trends according to age and risk of occurrence, the public in risk group can be made aware decreasing the morbidity and mortality.

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