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HISTOPATHOLOGICAL SPECTRUM OF URINARY BLADDER LESIONS IN A TERTIARY CARE HOSPITAL: A TWO YEAR PROSPECTIVE STUDY.

Pathology

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ABSTRACT

BACKGROUND: Urinary bladder lesions, non-neoplastic and neoplastic, are jointly accountable for substantial morbidity and mortality throughout the world.

OBJECTIVE: Aim of the present study was to analyse the histopathological features of various lesions in bladder biopsies and to study the frequency of different pathological lesions at a tertiary care institute.

MATERIALS AND METHODS: This was a prospective study done over a period of two year in the Department of Pathology, MMIMSR, Mullana from 1st April 2016 to 31th March 2018. Histopathological examination of specimens was carried out and the lesions were classified into various types on light microscopy.

RESULTS: A total of 96 urinary bladder biopsies were studied in a period 2 years. Age of the patients in our study ranged from 21 years to 89 years with a peak age incidence of cases in 7th decade. Among the 96 cases, 7 were non- neoplastic and 89 were neoplastic lesions. Amongst the 89 neoplastic lesions maximum cases were of urothelial neoplasms.

CONCLUSION: The present study was undertaken mainly to highlight the importance of histopathological examination in the diagnosis of bladder lesions.

KEYWORDS

Urinary Bladder, Neoplastic, Urothelial Neoplasms.

INTRODUCTION

Urinary bladder lesions, non-neoplastic and neoplastic, are jointly accountable for substantial morbidity and mortality throughout the world. The non-neoplastic lesions in particularly cystitis comprise an imperative source of symptoms and signs. These diseases are considered more disabling than fatal [1]. Neoplasms of the bladder pose biologic and clinical challenges [2]. Frequency of bladder neoplasms account for 6% and 2% cancer occurance in male and female respectively. It is considered the second most common malignancy which is seen by urologists [3]. The commonest type is Urothelial carcinoma accounting for 90% of all primary tumors of the bladder [4]. Etiological agents play some role in progression of bladder cancer which is well established. External risk factors like cigarette smoking, occupational carcinogens, schistosoma hematobium infection in endemic areas, use of artificial sweeteners, patients on long term use of cyclophosphamide and analgesics have significant role in causation of bladder cancer [6].

Precise diagnosis of urinary bladder lesions requires concurrent data from urology, radiology and surgical pathology labs. Cystoscopy is considered the primary diagnostic tool for patients who are suspected of having bladder tumours because there is direct visualization of the bladder mucosa which helps in taking biopsies from representative areas [7,8].

Aim of the present study was to analyse the histopathological features of various lesions in bladder biopsies and to study the frequency of different pathological lesions at a tertiary care institute.

MATERIALS AND METHODS

A prospective study was done over a period of two year in the Department of Pathology, MMIMSR, Mullana from 1st april 2016 to 31th march 2018 and included 96 cases. The material for the study was comprised of biopsy from Transurethral resection of bladder tissue (TURBT). The biosy specimens were received in 10% formalin. Data was collected in a preset proforma. Clinical and cystoscopic findings with the clinical diagnosis of all cases of urinary bladder lesions sent to the laboratory were noted.

The entire tissue was processed in all the cases. Routine processing was done starting from fixation, dehydration, embedding and section cutting. Staining was done by H&E in most of the cases with the help of special stains wherever necessary. Histopathological examination of specimens was carried out and the lesions were classified into various types on light microscopy. Data was analysed and tabulated for evaluation.

INCLUSION CRITERIA

All the TURBT biopsies received in the department of Pathology, MMIMSR, Mullana.

EXCLUSION CRITERIA

- Autolysed specimen
- Inadequate biopsies.

RESULTS

A total of 96 urinary bladder biopsies were studied in a period 2 years.

Haematuria was the most common clinical symptoms in 62.5% cases followed by pain (33.3%), and difficulty in urination (25%).

Age of the patients in our study ranged from 21 years to 89 years with a peak age incidence of cases in 7th decade, 29 cases(30.2%) followed by the 6th decade, 28 cases (29.16%). Least number of cases were seen in 3rd and 9th decade.

TABLE1: Age distribution of urothelial lesions

Age distribution	Number of cases	Percentage
21-30	2	2.08%
31-40	8	8.33%
41-50	20	20.83%
51-60	28	29.16%
61-70	29	30.2%
71-80	7	7.29%
81-90	2	2.08%
Total	96	100%

Males were more commonly affected than females. In the present study there were 85 male patients (88.54%) and 11 females (11.45%) with M:F ratio of 7.7:1.

Among the 96 cases, 7(7.29%) were non- neoplastic and 89 (92.7%)were neoplastic lesions Of the 07 non-neoplastic lesions, there were 4 cases of non-specific cystitis, 1 case each was of malakoplakia, tubercular cystitis and follicular cystitis.

TABLE-2: Distribution of Non-neoplastic lesions

Diagnosis	No. of cases
Malakoplakia	01
Tubercular cystitis	01
Follicular cystitis	01
Chronic non-specific cystitis	04
Total	07

Amongst the 89 neoplastic lesions which were observed, 84 cases (94.38%) were of urothelial neoplasms. There were 3 cases of squamous cell carcinoma and 2 cases of adenocarcinoma.

TABLE-3: Distribution of neoplastic lesions

Diagnosis	No. of cases	Percentage
Urothelial neoplasm	84	94.38%
Squamous cell carcinoma	03	03.37%
Adenocarcinoma	02	02.25%
Total	89	100%

Of the 84 cases of urothelial neoplasms 81 cases (96.42%) were noninvasive urothelial neoplasms and 3 cases (3.57%) were invasive urothelial neoplasms.

Out of 81 cases of noninvasive urothelial neoplasms, low grade non-invasive papillary urothelial carcinoma (PUCLG) constituted 39 cases (48.15%), high grade papillary urothelial carcinoma (PUCHG) constituted 37 cases (45.68%) and papillary urothelial neoplasm with a low malignant potential (PUNLMP) constituted 03 cases (03.70%). There was one case (01.23%) each of inverted papilloma and nephrogenic adenoma.

TABLE-4: Distribution of noninvasive urothelial neoplasms

Diagnosis	No. of cases	Percentage
Inverted papilloma	01	01.23%
PUNLMP	03	03.70%
PUC LG	39	48.15%
PUCHG	37	45.68%
Nephrogenic adenoma	01	01.23%
Total	81	100%

DISCUSSION

Urinary bladder lesions are most frequently encountered by surgical pathologists. Both benign and malignant lesions are well recognized but latter being more common. Cystoscopy is a primary diagnostic tool and TURBT being the most frequently practiced therapeutic and diagnostic procedure [9,10]. While most of the lesions are comparatively easy to identify, seldom there can be diagnostic difficulties. The role of pathologist is not just restricted to giving a diagnostic label, but also in providing additional information which can impact treatment of the patient [11].

In our study most common age group was 61-70 years which included 29 (30.2%) patients followed by 51-60 years which had 28(29.16%) patients. Similar findings were noted by **Baidya R et al [12] and** Susmitha et al [6]. Least common age group was 21-30 years and 81-90 years having 2(2.08%) patients each.

The male to female ratio from various studies highlights the association bladder neoplasms and increased male susceptibility. Present study also had male preponderance with a M:F ratio of 7.7:1. However, there is broad range of M:F ratio observed between various studies.Shah PY et al [13] found this ratio to be 2.29:1. In studies done by Lim et al[14] and Vaidya et al[15] male to female ratio was 5:1 and 4.5:1 respectively. Smoking had a predominant role in development of bladder cancer in males along with other factors like occupational carcinogens [16].

Out of 7 non-neoplastic lesions in the present study, 04 cases were of chronic non-specific cystitis and 1 case each was of granulomatous cystitis, follicular cystitis and malakoplakia. These results were similar to study done by Srikoustubah et al [2] and Shruti HP et al [9] with chronic non-specific cystitis as predominant lesion studied.

Microscopy of chronic non-specific cystitis showed the normal overlying urothelium in all the cases. The lamina propria revealed edema and infiltration by chronic inflammatory cells.

Findings in case of tuberculous cystitis were characterized by focal ulcerations, with well formed granulomas composed of epithelioid cells, histiocytes, Langhan's giant cells, and lymphocytes along with areas of caseation necrosis. This correlated with the findings of Young et al. [11].

Sarma [17] stated that follicular cystitis is a term which is used to describe the presence of lymphoid follicles with germinal centres in the urinary bladder.

In one case of follicular cystitis, in the present study, dense aggregates of lymphoid follicles with germinal centres were seen in the lamina propria.

Urinary bladder is most commonly involved organ by Malakoplakia. It is visible as yellow white soft raised plaques on the mucosal surface [18].

In the present study, there was one case of Malakoplakia, which showed numerous histiocytes cantaining –MichaelisGutmann bodies infiltrating the lamina propria.

Majority of tumours of the urinary bladder are of epithelial origin, having origin from the urothelium, the specialized, transitional type of epithelium, that lines the bladder. Approximately 90% of malignant bladder tumours are transitional cell carcinomas. The remaining 10% comprises all other types of carcinomas [19].

Among the 89 neoplastic lesions which were studied, urothelial neoplasm was the predominant type constituting 84 cases (94.38%). Other neoplastic lesions included 2 cases (02.25%) of adenocarcinoma and 3 cases (03.37%) of squamous cell carcinoma. These findings were nearly correlated with the study of Eble and Young [11], Sharma et al [20] and Dravid et al [21].

Urothelial neoplasms included 03 cases (3.57%) of invasive urothelial carcinoma and 81 cases (96.43%) of non-invasive urothelial neoplasms.

Wynder and Goldsmith [22] observed that 75% of patients presented with superficial (non-invasive) disease, while 20% and 5% presented with invasive and metastatic diseases respectively. In a study done by Srikousthubha et al [2] 12.5% cases were invasive urothelial neoplasms and 87.5% cases were noninvasive urothelial neoplasms. Thus, non-invasive neoplasms were more frequent than the invasive urothelial carcinomas probably because of early detection by cystoscopic biopsies.

Non-invasive urothelial neoplasms included 1 case of inverted papilloma and nephrogenic adenoma each, 3 cases of papillary urothelial neoplasm of low malignant potential, 39 cases of low-grade non-invasive urothelial carcinoma, 37 cases of high grade non-invasive urothelial carcinoma. Similar findings were observed by Srikousthubha et al [2] and Baidya et al [12].

Nephrogenic adenoma of the urinary bladder are probably regarded as papillary and glandular transformation of normal bladder epithelium [23]. It is a rare lesion which could easily be confused and misdiagnosed as a number of malignant lesions of the urinary bladder [24]. Microscopic findings in our case revealed a lesion composed of small as well as cystically dilated tubules which were lined by cuboidal cells having plump vesicular nuclei, some giving hobnail appearance.

One case of inverted papilloma, was characterized by downward growth from the surface in form of anastomosing cords and nests of cells. Tumour cells were uniform, with streaming and peripheral palisading of nuclei. The cellular layers were of normal thickness and maintained polarity. Mitotic activity was absent. The overlying epithelium was normal.

In cases of Papillary urothelial neoplasm of low grade malignant potential (PUNLMP), histopathologically the tumor was characterized by delicate papillary structures with orderly arrangement of cells having minimal architectural abnormalities and nuclear atypia usually limited to basal layer.

Low grade urothelial carcinoma revealed characterstic papillary excrescences which were more compact, crowded, fused at the base and lined by unordered cells showing both architectural and cytological abnormalities with frequent mitosis.

Most of the cases of high grade urothelial carcinoma showed fused papillary axes in majority of areas resulting in sheets and solid structures. The cells have enlarged, hyperchromatic, pleomorphic nuclei in full thickness of the epithelium with brisk atypical mitosis.

CONCLUSION

The present study was undertaken mainly to highlight the importance

of histopathological examination in the diagnosis of bladder lesions. In current era, the diagnosis and monitoring of bladder lesions is based on combination of cystoscopy, histopathology and urine cytology. These various methods have their own limitations and cannot diagnose the presence of bladder tumours at every point of time. But histopathological examination remains the gold standard method for diagnostic and therapeutic purpose. Awareness regarding various histological features of bladder lesions, their neoplastic potential, risk of recurrence and possible pitfalls aids in accurate diagnosis. Regular attempts should also be made to create alertness among the general population concerning the bladder symptoms so that mortality and morbidity due to advanced bladder tumours can be prevented.

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