Original Article

Histomorphological pattern of lesions in cystoscopic bladder biopsies in a tertiary center in Nepal- A retrospective descriptive study

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ABSTRACT

Background: Bladder cancer accounts for 3% of all cancer diagnoses and is one of the most common cancers worldwide. Bladder tumors have different subtypes and behavioral patterns. This study is performed in the pathology department of Shree Birendra Hospital. It is a data review done on cystoscopic bladder biopsy results for the past 5 years to study the histomorphological patterns of various bladder lesions.

Materials and Methods: A hospital register-based retrospective study was conducted on the data of five years duration. The epidemiological parameters were calculated using Microsoft Excel.

Results: A total of 56 cystoscopic biopsies were performed during the study period of 5 years. Among them, 45(80.36%) were male and 11(19.64%) were female. The peak incidence was seen in the age group 70-79 years (26.78%). The majority of the patients had neoplastic lesions (83.92%). The peak incidence of neoplastic lesions also belonged to the age group 70-79 years (31.19%). The most common malignant lesion was papillary urothelial carcinoma i.e. 45 cases (95.74 % among the neoplastic lesions and 80.36% among all the total bladder lesions)

Conclusions: Among the bladder lesions that have undergone cystoscopic biopsies, urothelial carcinoma is the most common with male predominance. The early and definitive diagnosis with accurate grading and staging of bladder tumors can be done by histopathology. Early identification of bladder tumors has an impact on the therapeutic approach as well.

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INTRODUCTION

Currently, there has been an increasing incidence of bladder lesions worldwide, both neoplastic and non-neoplastic.[1] According to GLOBOCAN, bladder cancer accounts for 3% of all cancer diagnoses and is one of the most common cancers worldwide.[2] Bladder tumors have different subtypes and behavioral patterns.[3] This challenges both urologists and uropathologists for the diagnosis and treatment. According to a study done in Nepal, transitional cell carcinoma (TCC) is the most common variety of urinary bladder malignancies and the incidence is more in males. The grade of the tumor

strongly correlates with a smoking history.[4] Fortunately, bladder cancer is not among the most common cancers in Nepal, and bladder cancer accounted for 0.19 % of total deaths in 2018.[5,6]

Cigarette smoking is the most common cause of this malignancy. Other causative agents include aromatic amines and polycyclic aromatic hydrocarbons.[7] Painless hematuria is the most common clinical presentation.[8,9] Urinary frequency, urgency, or dysuria are other manifestations.[8] Cystoscopy with bladder biopsy remains the investigation of choice for diagnosis.[10] It also helps in prognostic assessment. Depending on grade, stage, spread, and muscle invasion, it can be treated with transurethral resection of the bladder or transurethral resection followed by intravesical bacillus Calmette-Guérin or intravesical chemotherapy, or radical cystectomy.[8-10]

Since bladder cancer is one of the most common neoplastic lesions of the genitourinary tract, we have studied clinicopathological features of bladder lesions with special emphasis on types of lesions and grading. This will help to determine the common pathology as well as the common type of neoplastic lesions in patients who have undergone cystoscopic biopsies for various clinical presentations. The findings of this study may prompt the researchers in Nepal to conduct a similar study on larger scales involving multiple tertiary centers to more accurately explain the histomorphological patterns of cystoscopic biopsy of urinary bladder lesions. This may further help in preventing the mortality and morbidity associated with urinary bladder carcinoma.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted in the pathology department of Shree Birendra Hospital, a tertiary care hospital in Kathmandu, using hospital records. All the cases of cystoscopic biopsies from the past 5 years (14th April 2017 to 13th April 2022) were included in the study. Permission to study was obtained from the institutional review committee. The hospital's pathology department's registers were used for this purpose and the records of all the patients who had undergone cystoscopic biopsies within the study period were used for analysis. The anonymity of the patients was ensured at all times. The cases with ambiguous diagnoses and those with incomplete demographic data were excluded from the study. Simple univariate and multivariate analyses were done using Microsoft Excel 2016 and SPSS v 25 to calculate the age and sex distribution of bladder lesions, and further subdivision of the lesions was done whenever possible.
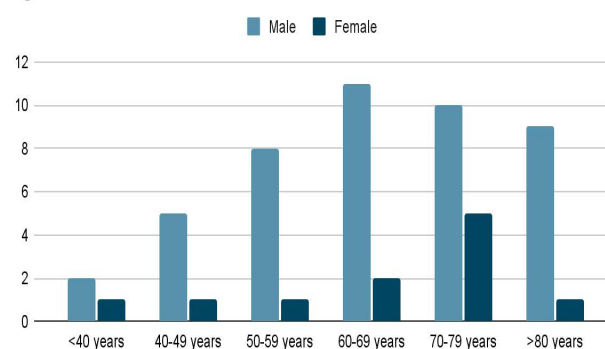
RESULTS

A total of 56 cystoscopic biopsies were performed during the study period of 5 years. Among them, 45(80.36%) were

male and 11(19.64%) were female. Peak incidence was in the age group 70-79 years (26.78%), as seen in Graph 1. The majority of the patients who had undergone cystoscopic biopsies had neoplastic lesions constituting 83.92 %(47 cases), while 14.28% (8 cases) had non-neoplastic lesions, and 1.78% (1 case) had normal histology.

Among the patients with neoplastic lesions, 80.85 % were male and 19.35% were female. Among them, most of the cases i.e. 31.91% belonged to the age group 70-79 years.


Graph 1: *Age and gender-wise distribution of bladder lesions*

The most common non-neoplastic lesion found in our study was chronic cystitis (6 cases) while the most common malignant lesion was papillary urothelial carcinoma i.e. 45 cases (95.74 % among the neoplastic lesions and 80.36% among all the total bladder lesions). The details of the histomorphological patterns of cystoscopic biopsies seen in our study are given in Table 1 and Graph 2. The neoplastic lesions have been classified according to WHO classification.

Table 1: Histomorphological diagnosis of bladder lesions among the study population

S.N.		Histomorphological diagnosis	No of cases	Percentage
A.		**Non-neoplastic**	**8**	**14.28%**
		Non-specific cystitis	6	10.71%
		Cystitis glandularis	1	1.78%
		Hemorrhagic cystitis	1	1.78%
B.		**Neoplastic**	**47**	**83.92%**
	a	**Benign**		
		Urothelial papilloma	2	3.57%
	b	**Malignant**		
		Urothelial carcinoma	45	80.36%
		PUNLMP	0	0%
		Low-grade non-invasive	8	14.28%
		High grade non-invasive	3	5.36%
		Invasive	34	60.71%
C.		**Normal histology**	**1**	**1.78%**
		Total	56	100%

Histomorphological Patterns
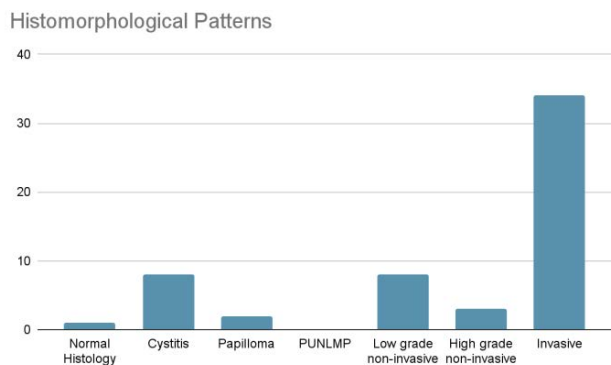
Graph 2: Histomorphological patterns of cystoscopic biopsies of urinary bladder lesions

Among the urothelial carcinoma, 34 cases (75.55% of total urothelial carcinoma) were invasive while no. of cases with low-grade non-invasive and high-grade non-invasive carcinoma were 8 (17.78%) and 3 (6.67%) respectively.

DISCUSSION

Patients with the disease of the urinary bladder, both neoplastic and non-neoplastic, are commonly present in the hospitals of Nepal. This study is performed mainly to highlight the findings of histopathological examination of cystoscopic biopsies of bladder lesions in a tertiary center of Nepal. The lesions of the urinary bladder present with a wide range of clinical presentations. Non-neoplastic lesions include cystitis cystica/glandularis, keratinizing squamous

metaplasia, or nephrogenic metaplasia.[11] Similarly, the WHO has classified the tumors of the urinary tract in various headings and subheadings.[12]

Bladder cancer ranks as the ninth most frequently diagnosed cancer worldwide, with the highest incidence rates observed in men in Southern and Western Europe, and North America, as well as in certain countries in Northern Africa or Western Asia.[13,14] The most common type of bladder cancer is urothelial carcinoma which accounts for almost 90% of the primary bladder tumor.[15] In our study, 83.92 % of the cystoscopic biopsied lesions were neoplastic which is in accordance with the study done in India.[15] The incidence of the malignant lesion was most common in the age group 70-79 years (31.91% of all malignant lesions)which is a higher age group compared to other similar studies[15,16] where the most common age group was 60-69 years. Similarly, the incidence of bladder lesions was more in males as compared to females. A similar finding was present in the study done by Dravid et al, Goyal et. al, and Hasan et. al.[1, 15, 16] The underlying etiology of the higher incidence of bladder cancer in males is unclear but the possible reasons could include smoking habits, tumor biology, occupational risk factors, and sex steroid hormones and their receptors.[17] Our study demonstrated that papillary urothelial cancer(80.36%) is the most common among the patients visiting the tertiary center of Nepal who had undergone cystoscopic biopsy and a similar finding was present in the previous studies.[1,16]

In this study, muscle invasion was present in 75.55% of urothelial cancer which is similar to the finding of Goyal et al[15] but higher compared to the finding of Dravid et. al and Gajjar et. al.[1, 18]

Table 2: Comparison of findings of similar studies with the present study

	Dravid et. Al[1]	Goyal et. Al[15]	Gajjar et. Al[18]	A Shah et al[19]	Hasan et. Al[16]	Present study
Common age group for bladder lesion (%)	60-69 years (48.64%)	61-70 years (33%)	61-70 years (33%)	61-70 years (22.33%)	41- 68 years (-)	70-79 years (26.8%)
Male : Female	1.04:1	5.25:1	3:1	2.27:1	2.5:1	4.09:1
Papillary urothelial carcinoma (%)	55.39%	96%	-	69.55%	93.33%	80.36%

Our Study is limited to Shree Birendra Army Hospital only, which is not a dedicated urological center where the number of patients with bladder lesions is higher and thus, a larger no. of cystoscopic biopsies are performed. Similarly, due to the ongoing Covid-19 pandemic, the no. of cystoscopic biopsies performed in the past 2 years has significantly decreased. Thus, the findings of our study cannot be generalized because of the fewer sample size. However, our study may give a general idea of histological patterns of cystoscopic biopsies of urinary bladder lesions in the tertiary center of Nepal and it may prompt other researchers to perform similar studies on large scale involving multiple tertiary centers to determine the patterns more accurately. Since this is a retrospective descriptive study done from

the record book of the pathology department, there is no correlation between clinical presentation and pathological findings. Also, the assessment of associated risk behavior (Smoking status, Alcohol intake, Radiation exposure) and their correlation with pathological findings has not been done.

CONCLUSIONS

Urinary bladder lesions are common in Nepal. Among the bladder lesions that have undergone cystoscopic biopsies, urothelial carcinoma is the most common with male predominance. A high prevalence of 83.92% of the cases of bladder tumors is noted. The early and definitive

diagnosis with accurate grading and staging of bladder tumors can be done by histopathology. The WHO/ISUP consensus classification (2016) for Urothelial tumors reflects an improved understanding and knowledge of the morphological types and enables us to diagnose urothelial tumors into clinically and prognostically relevant entities. Early identification of bladder tumors has an impact on the therapeutic approach as well. Since bladder tumors have high mortality owing to their late diagnosis, it is vital to create awareness among the general public regarding bladder symptoms (eg. hematuria) and their early assessment. This can prevent mortality and morbidity due to advanced bladder tumors.

Conflict of Interest: None

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