



Original Article

Spectrum of histomorphological diagnosis in cystoscopic bladder biopsies

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ABSTRACT

Background: Urinary bladder lesions are the main source of significant clinical symptoms which are more disabling than lethal. Bladder tumors constitute one of the most common urological pathology. Urothelial carcinoma accounts for 90% of all primary tumors of the bladder. This study aimed to determine the frequency of different types of lesions of the urinary bladder and to determine the grade and stage of urothelial tumors.

Materials and methods: This is a 2 years prospective study of cystoscopic biopsies carried out in the Department of Pathology, Medicare National Hospital and Research Centre, Kathmandu, Nepal.

Result: Out of 87 cases, 58 (66.67%) cases were neoplastic lesions and 29(33.33%) cases were non-neoplastic lesions. Majority of neoplastic lesions 96.55% were urothelial (transitional cell) tumors comprising predominantly of low grade papillary urothelial carcinoma 50.91%. Muscle invasion was seen only in high grade papillary urothelial carcinomas.

Conclusion: Among bladder tumors low grade papillary urothelial carcinoma is the most common.

INTRODUCTION

Urinary bladder lesions, both non-neoplastic and neoplastic, are common in the Nepalese community. They are often disabling but rarely lethal. Tumors of the bladder are an important source of both morbidity and mortality.¹ Worldwide, urinary bladder cancer is the seventh most common cancer, with an estimated global incidence of

330380 new cases in 2012.² Urothelial carcinoma is the commonest type accounting for 90% of all primary tumors of the bladder.³ The incidence of carcinoma of the bladder is higher in men than in women, in developed than in developing nations, and in urban than in rural dwellers. About 80% of patients are between 50 and 80 years of age.¹ At least 75 – 80 % of newly diagnosed bladder cancers are superficial, non- invasive papillary urothelial carcinoma, and at least 50 – 75% of these patients will recur over time. This high recurrence rate impacts heavily on prevalence rates making bladder cancer the second most common cancer behind prostate cancer in males.⁴ Neoplastic lesions

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Table 1: Distribution of cases according to histomorphological diagnosis

S. No	Histomorphological Diagnosis	No. of cases	Percentage
I	NON – NEOPLASTIC LESIONS	29	33.33%
1	Chronic non-specific cystitis	11	12.63%
2	Eosinophilic cystitis	4	4.60%
3	Acute on chronic cystitis	2	2.30%
4	Urethral carbuncle	2	2.30%
5	Follicular cystitis	1	1.15%
6	Cystitis cystica with Von Brunn's nest	4	4.60%
7	Cystitis glandularis	2	2.30%
8	Squamous metaplasia	1	1.15%
9	Tubercular cystitis	1	1.15%
10	Bladder diverticulum	1	1.15%
II	NEOPLASTIC LESIONS	58	66.67%
A	Benign	5	5.75%
	Urothelial papilloma	5	5.75%
B	Malignant	53	60.92%
1	Urothelial carcinoma	51	58.62%
2	Squamous cell carcinoma	2	2.30%
	Total	87	100%

Table 2: Histological grading of urothelial neoplasm as per ISUP/WHO 2004

S.No	Grade	No. of cases	Percentage
1	Papilloma	5	8.93%
2	PUNLMP	6	10.71%
3	Low grade papillary urothelial carcinoma	28	50 %
4	High grade papillary urothelial carcinoma	17	30.36%
	Total	56	100%

of bladder pose biologic, clinical, diagnostic and therapeutic challenges to both urologist and pathologist, as these tumors represent a heterogeneous group of tumors with different subtypes and behavioral patterns.^{1,5}

Cystoscopic bladder biopsy is a gold standard for accurate diagnosis and prognostic assessment of the patient. Hence, this study was undertaken to determine the frequency of different types of lesions of the urinary bladder and to determine the grade and stage of urothelial tumors so as to prevent mortality and morbidity associated with it.

MATERIAL AND METHODS

This is a prospective study carried out in the Department of Pathology, Medicare National Hospital and Research Centre, Kathmandu, Nepal, over a period of two years from September 2014 to August 2016. All the patients who visited Urology Department and subjected to cystoscopic biopsy were included in this study. The cystoscopic bladder biopsies taken were fixed in 10% formalin and then processed. Four microns thick sections were taken and

stained with Haematoxylin and Eosin stain (H&E). Special stains were used whenever required.

The World Health Organization (WHO)/International Society of Urological Pathology (ISUP) classification (2004) was used to grade the tumors into: urothelial papilloma, papillary urothelial neoplasm of low malignant potential (PUNLMP), low and high grade urothelial (transitional cell) carcinomas (TCC). Pathological staging of the urothelial cancers was done according to the TNM system and data recorded as pTa: tumor limited to mucosa, pT1: invasion of lamina propria and pT2 as invasion of muscle.⁶

Inclusion criteria: All the transurethral resection of bladder tissue (TURBT) biopsies received in the Department of Pathology.

Exclusion criteria: Autolysed and inadequate biopsies were excluded.

The main purpose of this study was to determine the

Table 3: Histological staging of urothelial neoplasm as per TNM staging

S.No	Staging	No .of cases		Total	Percentage
		LGPUC	HGPUC		
1	pTa	18	1	19	42.22%
2	pT1	10	5	15	33.33%
3	pT2	0	11	11	24.45%
	Total	28	17	45	100%

frequency of different types of lesions of the urinary bladder and the grade and stage of urothelial tumors.

RESULTS

A total of 87 cystoscopic biopsies were analyzed during the study period. Among these study population, 64 cases (73.56%) were males and 23 cases (26.44%) females with male to female ratio of 2.7:1. Similarly male preponderance was observed among neoplastic lesion with male to female ratio of 3.8:1 with 46 cases (79.31%) being male and 12 cases (20.69%) being female. Age of the study population ranged from 21 to 80 years. The peak incidence was seen between 61 -70 years followed by 71-80 years group. More than 50%, i.e. 65.1% (n=57) of bladder lesions of both sexes were observed above 50 years of age.

Spectrum of different pathological lesions was observed (Table 1). Out of 87 cases, 58 (66.67%) were neoplastic lesions and 29(33.33%) were non- neoplastic lesions. Out of 58 (66.67%) neoplastic lesions, 56(96.55%) were urothelial (transitional cell) tumors. As per histological grading WHO/ISUP (2004) used in the study showed high prevalence of low grade urothelial carcinoma, followed by high grade urothelial carcinoma, papillary urothelial neoplasm of low malignant potential(PUNLMP) and

urothelial papilloma accounting for 50 %, 30.36%, 10.71% and 8.93% respectively. (Table 2) As per TNM staging used in our study we observed majority of the bladder tumors were invasive accounting for 45 (77.59%) cases out of which 19 (42.22%) cases were in pTa stage , 15 (33.33%) cases were in pT1 and 11(24.45%) cases were in pT2 stage. Muscle invasion was seen in 11(24.45%) cases of high grade papillary urothelial carcinoma whereas none of the cases of low grade papillary urothelial carcinoma showed muscle invasion. (Table 3)

DISCUSSION

The present study revealed variable histomorphologic diagnosis of bladder lesions as shown in table 1. Among the non-neoplastic lesions, chronic nonspecific cystitis was the most common accounting for 11(12.63%) cases. This finding is comparable with study done by Dravid et al where nonspecific cystitis was seen in 18 (12.94 %)cases and with Vaidya et al where cystitis cases were 16(14.95%)^{7,8}

The demographic characteristics of the patients in current study were relatively similar to a number of studies which describe a peak incidence of bladder lesions in the age 61 – 70 years and predominance in male with male to female ratio of 2.78 : 1. The increase prevalence of bladder cancers in males than in females is probably related to difference in smoking habits and occupational exposure.^{1,9}

Bladder tumors were the most common type of lesion in the present study and were seen in 58 (66.67%) cases of which 55 (94.83%) cases were urothelial (transitional cell) tumors. Majority were malignant neoplasm comprising of 51 (58.62%) cases of urothelial carcinoma and 2 (2.30%) cases of squamous cell carcinoma which were in concordance with following studies done by Mahesh K et al, Mohammad

Table 4: Comparison of frequency of various malignant neoplasm of bladder in different studies

Neoplastic lesions	Mahesh K et al ¹⁰	Mohammad M et al ¹¹	Dravid et al ⁷	Present study
Urothelial carcinoma	28(46.6%)	467(93.3%)	77(53.39%)	51(58.62%)
Squamous cell carcinoma	2(3.33%)	13(2.6%)	7(5.03%)	2(2.30%)

Table 5: Comparison of frequency of histological grades of bladder neoplasms in different studies

Grading	Laishram et al ¹²	Vaidya et al ⁸	Vibhav KG et al ¹³	Dravid et al ⁷	Present study
PUNLMP	7.69%	10.28%	4.1%	5.43%	10.71%
LGPUC	53.85%	29.91%	32.29%	22.82%	50 %
HGPUC	34.61%	32.7%	60.41%	55.43%	30.36%

Table 6 Comparison of frequency of histological stages of bladder neoplasms in different studies

TNM Stage	Laishram et al ¹²	Dravid et al ⁷	Vaidya et al ⁸	Present study
pTa	14(53.85%)	20(21.73%)	39(48.14%)	19(42.22%)
pT1	4(15.38%)	49(53.26%)	18(22.22%)	15(33.33%)
pT2	8(30.77%)	18(19.56%)	24(29.63%)	11(24.45%)

M et al and Dravid et al (table 4).^{7,10,11}

The histological grading of the urothelial neoplasm in present study showed increased prevalence of low grade papillary urothelial carcinoma (LGPUC) correlated with similar studies as shown in table 5.^{7,8,12,13} Histological grading and staging are the two important factors for tumor recurrence, progression and for determination of treatment options for patients with bladder carcinoma.¹⁴ In present study we observed majority of the malignant bladder tumors were invasive, accounting for 45 (77.59%) cases out of which 19 (42.22%) cases were in pTa stage, 15 (33.33%) cases were in pT1 and 11(24.45%) cases were in pT2 stage. This findings were comparable with similar studies shown in table 6.^{7,8,12} Muscle invasion was seen in 11(24.45%) cases of high grade papillary urothelial carcinoma whereas none of the cases of low grade papillary urothelial carcinoma showed muscle invasion.

CONCLUSION

This study revealed a wide spectrum of non- neoplastic and neoplastic urinary bladder lesions. Majority of the cases were malignant bladder neoplasms of urothelial origin, large number of which was low grade papillary urothelial carcinoma. The importance of including muscle in cystoscopic biopsies needs to be emphasized as muscle invasion is an important predictor of prognosis.

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