

Journal of Nobel Medical College

Available Online: www.nepjol.info, www.nobelmedicalcollege.com.np
Volume 7, Number 1, Issue 12, January-June 2018, 6-10

Original Article

Spectrum of Urothelial lesions in Cystoscopic biopsies: A Histopathological Perspective.

Nirajan Mainali¹, Prabesh Chaudhary¹, Nepal Niraj¹ and Jit Shrestha².

¹Department of Pathology, ²Department of Urology, Nobel Medical College Teaching Hospital

Received: 25th February, 2018; Revised after peer-review: 25th March, 2018; Accepted: 28th April, 2018

DOI: <http://dx.doi.org/10.3126/jonmc.v7i1.20840>

Abstract

Background

Urinary Bladder lesions are one of the most common presenting lesions in the Outpatient department. On the other hand neoplastic conditions of the urinary bladder are the major cause of morbidity and mortality. Bladder carcinoma is the 7th most common carcinoma worldwide and is the major cause of morbidity and mortality.

Material & Methods

All the cystoscopic biopsy received in the Department of Pathology at Nobel medical college and teaching hospital from August 1st 2016 to July 31st 2017 was included in the study. Received cystoscopic biopsies were processed and classified as per 2004 WHO/ISUP classification of urothelial tumors Patients were also categorized according to the age and sex to find out the prevalence of urothelial lesions on them.

Results:

Out of the 78 patients 54 were males and 24 were females. Very few (n=15, 19.23%) cases of non neoplastic lesions were biopsied. Low grade urothelial carcinoma was the most common diagnosis in the patients which accounts for 49.2 % (n=31) of the total neoplastic conditions.

Conclusion:

Low grade urothelial carcinoma was the most common lesion encountered with the peak age range of 61-70 years.

Key words:

Urothelial carcinoma, low grade, high grade, cystitis

Introduction:

Urinary Bladder lesion is one of the most common presenting lesions in the OPDS, which includes both neoplastic and non neoplastic conditions. Non neoplastic conditions like cystitis are barely lethal but they deteriorates the quality of life. On the other hand neoplastic conditions of the urinary bladder are the major cause of morbidity and mortality[1]. Prevalance of Bladder carcinoma varies worldwide. It ranks 7th most common cancer

worldwide[2] and is 2nd among the tumor seen by urologist after prostatic cancer[3]. Prevalence of Urothelial tumors varies in Asian countries. As per Indian census, it is the 9th most common tumor in India[4]where as in Pakistan, it ranks 3rd behind lung and oral cavity cancer in male[5]. Incidence of male to female patients are (3-4:1) [6]. The higher number of urothelial carcinoma in male may be due to smoking habits, and occupational exposure[7].Most of the patient present

with gross and microscopic hematuria[8]. Types of urothelial carcinoma have varied from country to country. 90% of the bladder carcinoma in the western countries were those of Transitional cell type, where as Squamous cell type was the most common in Egypt[9]. WHO/ ISUP has categorized urothelial tumors into Papilloma, Papillary urothelial neoplasm of low malignant potential (PUNLMP), Low grade papillary carcinoma (LPUC) and high grade papillary urothelial carcinoma[10]. Majority of the newly diagnosed bladder cancers are of low grade papillary urothelial carcinoma without invasion which has shown recurrence rate up to 75%[11]. The recurrence of tumor has increased in the prevalence of the tumor. The various subtypes of bladder tumor has shown difference in clinical, diagnostic and therapeutic differences[12]. Cystoscopy is the primary and gold standard diagnostic tool for the bladder tumors[13]. So, this study was done to find the frequency of different types of bladder lesions seen in our medical college along with the variability in age and sex of the patient.

Material and Methods:

Ethical clearance from the institutional review committee was taken for the study. All the cystoscopic biopsy received in the Department of Pathology at Nobel medical college and teaching hospital from August 1st 2016 to July 31st 2017 were included in the study. Received cystoscopic biopsies were fixed overnight with 10% formalin and then processed. Four micron thick sections were obtained and were stained with H&E. 2004 WHO/ISUP classification of urothelial tumors were used to categorized neoplastic lesions. Patients were also categorized according to the age and sex to find out the prevalence of urothelial lesions on them.

Result:

A total of 78 cystoscopic biopsies were received in the department of Pathology

over the study period. All of them were included in the study. Among the 78 cases, 54 (69.24%) were males and 24(30.76%) were females with male: female ratio of 2.25:1. Neoplastic conditions were not seen in any sex group below 50 years of age. Patients with neoplastic conditions outnumbered than the non neoplastic condition. A total of 63 neoplastic lesions were seen in compare of 15 non neoplastic conditions. Male (n=46) to female (n=17) ratio in neoplastic condition was 2.7:1. Age group of the patient ranged from 31 years to 92 years. Peak age group was present in between 61-70 years. Distribution of the patient as per age and sex were shown in Table 1.

Table 1: Age and sex distribution of all patients

Age (yr)	Male	%	Female	%	Total	Percentage (%)
<40	2	2.56	0	0	2	2.56
40-50	5	6.41	3	3.84	8	10.25
51-60	12	15.38	6	7.69	18	23.07
61-70	23	29.48	10	12.82	33	42.30
71-80	10	12.82	4	5.12	14	17.94
>80	2	2.56	1	1.28	3	3.84
	54	69.24	24	30.76	78	100

Various histopathological diagnosis were tabulated (Table 2) as non neoplastic and neoplastic lesion. Among the non neoplastic lesion chronic non specific cystitis was the most common lesion encountered.

Table 2: Distribution of cases according to histopathological diagnosis

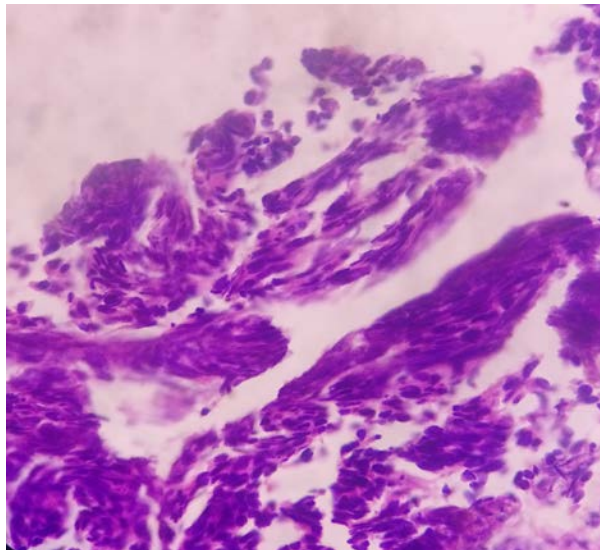
S. N.	Histopathological diagnosis	No. of Cases	%
A.	Non Neoplastic lesions	15	19.23
1	Chronic non specific cystitis	08	10.25
2	Eosinophilic cystitis	01	1.28
3.	Acute of Chronic Cystitis	04	5.12
4	Follicular cystitis	01	1.258
5	Tubercular cystitis	01	1.28
B	Neoplastic Lesions	63	80.77

A total of 63 patients of neoplastic lesions were observed in the study. Distributions

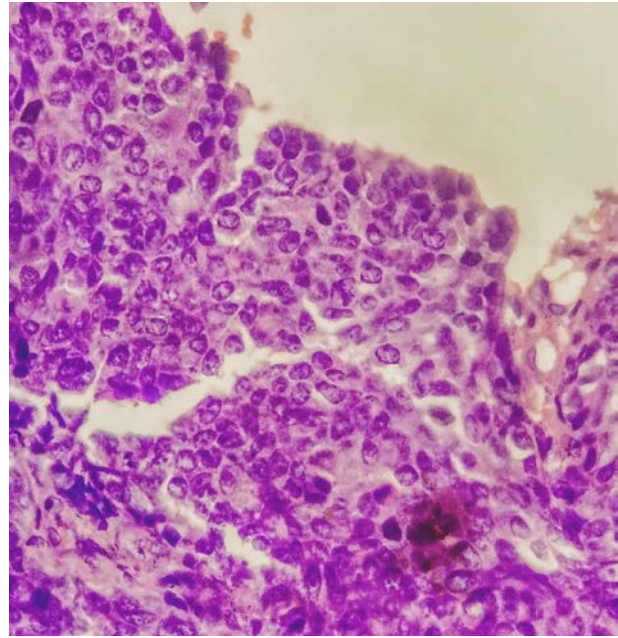
of the neoplastic lesions were done according to 2004 WHO/ISUIP classification (Table 3). Of the total neoplastic lesion low grade papillary urothelial carcinoma (n=31, 49.2%) was the predominance one, none of which showed muscular invasion. 14 cases (22.23%) were those of high grade urothelial carcinoma. 10 out of 14 cases showed muscular invasion. All the neoplastic lesions were those of transitional cell type.

Table 3: Histological Grading of Urothelial Neoplasm as per ISUP/WHO 2004

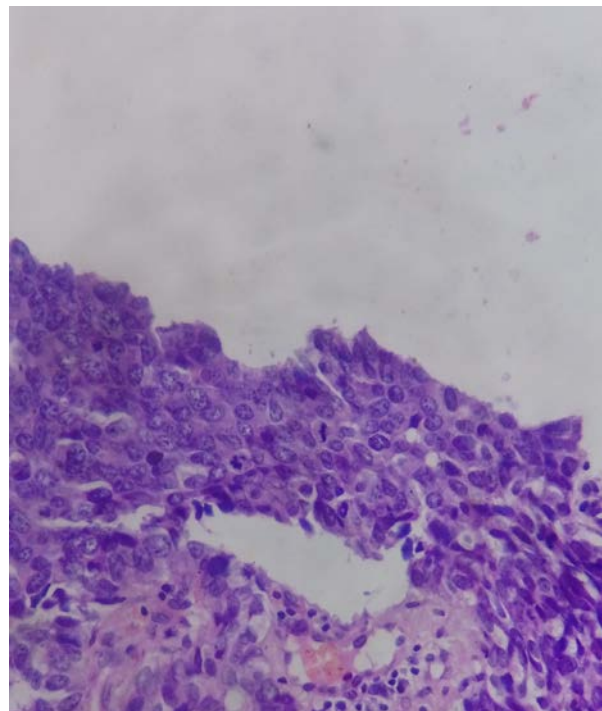
S. No	Grade	No. of cases	Percentage
1	Papilloma	8	12.69
2	PUNLMP	10	15.87
3	Low grade papillary urothelial carcinoma	31	49.20
4	High grade papillary urothelial carcinoma	14	22.23
		63	100



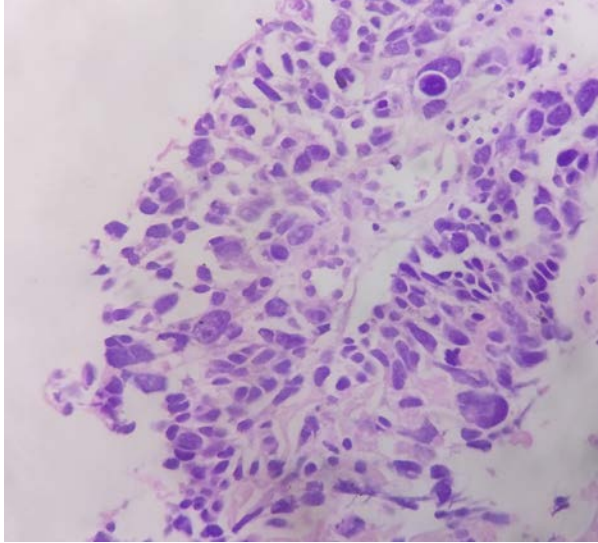
Picture 1(100x magnification, H&E Stain): Papilloma showing papillary fragments.



Picture 2(400x magnification, H&E Stain): Papillary urothelial neoplasm of low malignant potential (PUNLMP) showing proliferation of cells without mitosis and significant atypia.



Picture 3(400x magnification, H&E Stain): Low grade Urothelial Carcinoma showing mitosis at all level with moderate cellular atypia but with the preservation of an umbrella cells.



Picture 4(400x magnification, H&E Stain): High Grade Urothelial Carcinoma showing significant cellular atypia along with prominent macro-nucleoli and loss of umbrella cells.

Discussion:

Urothelial Papilloma is a benign tumour of an urinary bladder with a finger like projection where as PUNLMP (papillary urothelial neoplasm of low malignant potential) is an abnormally thick urothelium, but without cytologic atypia. They share few features of similarity with papilloma. Low grade papillary urothelial carcinoma is a papillary neoplasm lined by urothelium with minimal nuclear atypia consisting of scattered hyperchromatic nuclei, infrequent mitotic figures and mild variation in size and shape where as High grade papillary urothelial carcinoma is a urothelial neoplasm exhibiting papillary fronds which show cells that are dyscohesive with large hyperchromatic nuclei, high degrees of anaplasia and atypical mitotic figures [2]. Cystoscopic biopsy is the primary diagnostic tool in the diagnosis of urothelial lesions. Apart from the diagnosis, it also provides additional information to the urologist which can impact the treatment[14].

In our study, 69.24% of the total patients were male and male to female ratio was

2.25 :1 In the study done by Pudasaini et al[14] it was 3.5:1 but in the study done by Thapa et al, it was 2.7:1[15]. Peak age group of our study was 61-70 years with presence of 42.30% of total cases of the study which is similar to the study done by Pudasaini et al, Thapa et al and Laishram et al[14-16]. Various urothelial lesions were tabulated as neoplastic and non neoplastic lesions. Majority of the cases were those of neoplastic lesions (n=63, 80.77%). It may have happened, because biopsy was done in the clinical suspicion of neoplasia. Among the non neoplastic condition, non specific chronic cystitis was the most common disease encountered (n=8, 10.25%), which was similar to result of Thapa et al [15](12.94%) and Vaidya et al[17] (14.95%).

All of the malignant lesions in our study were those of urothelial carcinoma where as a small portion of squamous cell carcinoma was encountered in the study done by Thapa et al, Vaidhya et al and Bhawana et al [15, 17, 18] (it is ideal to mention the name of authors). Among the Urothelial carcinoma, low grade urothelial carcinoma was most common with presence of 31 cases (49.2%) which was similar to the study done by Laishram et al (53.85%)[16] and Thapa et al (50%)[15]. Present study was carried out to find out the spectrum of bladder lesions in Nobel Medical college. Since Pathological grading and muscle invasion are the most significant predictors of survival [19], we looked for the muscle invasion in each malignant case. Muscle invasion was seen in 10 cases (15.87% of total neoplastic conditions) of high grade urothelial carcinoma where as it was not seen in low grade carcinoma [15]. In the study done by Laishram et al, 42.1% showed muscle invasion [16], where as in the study done by Pudasaini et al it was 25% [14].

Our study shows the increase frequency of urothelial tumor in male patients of 61-70

years of age. Most of the tumor were low grade urothelial carcinoma. Muscle invasion correlates with high grade malignancy hence muscle inclusion in the cystoscopic biopsy is very important.

Conclusion:

Low grade urothelial carcinoma was the most common lesion encountered with the peak age range of 61-70 years. Though it is low grade, recurrence rate is high hence close follow up is required. Invasion of the muscle layer was presence in most of the high grade carcinoma, hence there might be a definite correlation between tumor grade and muscle invasion.

References:

[1] Vinay Kumar AA, and Fausto N, The lower urinary tract and male genital, Robbins and Cotran, Pathologic basis of disease system, 7th ed. Philadelphia: Saunders. (2004) 1026-36.

[2] Grignon DJ A-AH, Algaba F et al. , Tumors of the urinary tract: Infiltrating urothelial carcinoma, In Moch H, Humphrey PA, WHO Classification of Tumors of the Urinary System and Male Genital Organs. (2016)81–133.

[3] Mataka I, Bani-Hani K, Shotar A, Bani Hani O, Bani-Hani I, Transitional cell carcinoma of the urinary bladder: a clinicopathological study, Singapore medical journal.49:(0(2008)790-4.

[4] Yeole BB, Kurkure AP, Koyande SS, Geographic variation in cancer incidence and its patterns in urban Maharashtra, Asian Pac J Cancer Prev.7:3 (2006)385-90.

[5] Y. B. Epidemiology of cancers In Karachi (1995-1999),2001:31.

[6] The Urothelial tract: renal pelvis, ureter, urinary bladder and urethra. 3rd ed. SS IS, editor. Philadelphia: Lippincott Williams and Wilkins; (1999)1864

[7] Gupta P, Jain M, Kapoor R, Muruganandham K, Srivastava A, Mandhani A, Impact of age and gender on the clinicopathological characteristics of bladder cancer, Indian J Urol.25:2 (2009)207-10.

[8] Murphy DM, Zincke H, Furlow WL, Management of high grade transitional cell cancer of the upper urinary tract. J Urol.125:1(1981)25-9.

[9] Al HSe, Frequency of transitional cell carcinoma in local suburban population of karachi, JLUMHS. (2007)83-5.

[10] Pan CC, Chang YH, Chen KK, Yu HJ, Sun CH, Ho DM, Prognostic significance of the 2004 WHO/ISUP classification for prediction of recurrence, progression, and cancer-specific mortality of non-muscle-invasive urothelial tumors of the urinary bladder: a clinicopathologic study of 1,515 cases, Am J Clin Pathol.133:5(2010)788-95.

[11] Boustead GB, Fowler S, Swamy R, Kocklebergh R, Hounscome L, Stage, grade and pathological characteristics of bladder cancer in the UK: British Association of Urological Surgeons (BAUS) urological tumour registry, BJU Int. 113:6(2014)924-30.

[12] Hussain N SA, Mekki S et al, A clinicopathological study of urinary bladder neoplasms in patients at three centers in Khartoum, sudan, Sudan Journal of Medical Science.4(2009)249–55.

[13] Srikousthubha, Sukesh, C VR, Hingle S, Profile of lesions in cystoscopic bladder biopsies: a histopathological study, J Clin Diagn Res. 7:8(2013)1609-12.

[14] Pudasaini S, Subedi N, Prasad KB, Rauniyar SK, Joshi BR, Bhomi KK. Cystoscopic bladder biopsies: a histopathological study, Nepal Med Coll J.16:1(2014)9-12.

[15] Thapa R LM, Bhatta AD, Spectrum of histomorphological diagnosis in cystoscopic bladder biopsies, Journal of Pathology of Nepal 7(2017)1062-5.

[16] Laishram RS, Kipgen P, Laishram S, Khuraijam S, Sharma DC, Urothelial tumors of the urinary bladder in Manipur: a histopathological perspective. Asian Pac J Cancer Prev. 13:6(2012)2477-9.

[17] Vaidya S, Lakhey M, K CS, Hirachand S, Urothelial tumours of the urinary bladder: a histopathological study of cystoscopic biopsies, JNMA J Nepal Med Assoc. 52:191(2103)475-8.

[18]. Bhavana Grandhi M.D SSRBMD, Vissa Shanthi M.D, B.V.Vydehi M.D., N.Mohan Rao M.D., Ankita Goel M.D. Histopathological Spectrum of Urothelial Lesions,IOSR Journal of Dental and Medical Sciences.15:6(June 2016)04-7.

[19] Blaveri E, Brewer JL, Roydasgupta R, et al, Bladder cancer stage and outcome by array-based comparative genomic hybridization, Clin Cancer Res, 11,(2005) 7012-22.