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Original Research Article

Urothelial carcinoma of urinary bladder with histologic grading: a study in a tertiary care hospital, Bangladesh

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ABSTRACT

Background: Urinary bladder cancer is one of the most common forms of all cancers in the world. It is the ninth leading cause of death from cancer among men. The incidence of urinary bladder cancer in Bangladesh is increasing day by day. The aim of the study was to evaluate different clinic-pathological parameters of urothelial carcinoma of urinary bladder with the grade of the tumor.
Methods: This study was a cross sectional study done over a period of two years, from March 2018 to February 2020 at the department of pathology, Dhaka medical college, Dhaka. Total 73 samples were collected, fixed overnight in 10% buffered formalin and stained with hematoxylin and eosin staining. Pathological grading was confirmed and different clinic-pathological parameters were evaluated.
Results: Most of the cases (22 cases, 30.1%) were found in the fifth decade (51-60). Mean age of the patients was found to be 60.85 (±12.72) years, 58 (79.5%) cases were male and 15 (20.5%) cases were female with male to female ratio of 3.9:1. Most of the cases (49 cases, 67.1%) were smokers. Most common clinical presentation was hematuria (91.8% cases), most frequent tumor location was the lateral wall of the urinary bladder and 75.3% cases were reported as high-grade urothelial carcinoma.
Conclusions: Different clinic-pathological parameters with histologic grading were evaluated in this study which may have a significant impact in epidemiology, diagnosis and assessment of biological behavior of urothelial carcinoma.

Keywords: Urothelial carcinoma, Gender, Age, Tumor grade, Location

INTRODUCTION

Urinary bladder cancer is the 10th most common form of all cancers in this world. It is the sixth most common cancer and ninth leading cause of cancer death among men.[1] Urinary bladder cancer is more common in men than in women with a ratio of 3:1 globally.[2] The incidence and mortality rates were 9.6 and 3.2 per 100,000 in men and women respectively in 2018. The incidence of bladder cancer in Bangladesh was 1626 (1.1%), death was 992 (0.97%) and the 5-year prevalence rate was 2.08 in 2018 per 1,00,000 of population.[3] The rate of incidence of urinary bladder cancer is increasing with age. The highest incidence occurs in the 6th and 7th decades of life.[4] Though the incidence and prevalence were more in developed countries, the incidence is also increasing in developing countries like Bangladesh due to urbanization, increased use of chemicals and increased tobacco consumption.[1] Most of the cases (about 90%) of urinary bladder tumors are of epithelial origin, the remainder are of mesenchymal tumors. Most epithelial tumors are urothelial or transitional cell type.[5] The WHO classification of urothelial tumors is papilloma, papillary urothelial neoplasm of low malignant potential (PUNLMP), low grade urothelial carcinoma and high-grade urothelial carcinoma.[5,6] The aim and objectives of

the present study was to evaluate different clinic-pathological parameters of urothelial carcinoma of urinary bladder with histologic grading among Bangladeshi patients. This study may have a significant impact in epidemiology, diagnosis and assessment of biological behavior of urothelial carcinoma.

METHODS

This study was started with approval from the ethical committee of Dhaka medical college, Dhaka. It was a cross sectional descriptive study done over a period of two years, from March 2018 to February 2020. The study population included the urinary bladder sample obtained by the department of pathology, Dhaka medical college. People of both sexes and all age groups were included. The specimen was excluded if there was any history of chemotherapy and radiotherapy, patient with non-malignant bladder lesion and patient with urinary bladder diseases other than urothelial carcinoma. All specimens were immersed in 10% buffered formalin. These samples were fixed for 6 to 48 hours which was required for proper hematoxylin and eosin staining. Specimens were classified into low-grade and high-grade urothelial carcinoma according to the WHO classification guidelines. Then different epidemiological parameters were evaluated with histologic grading of urothelial carcinoma. The study included the following variables: age, sex, smoking habit, chief complaints, location of tumor and tumor grade.

Statistical analysis

Statistical analysis of the result was obtained by window-based computer software device with Statistical Packages for Social Science version 25 (SPSS-25). The results were calculated by using statistical formulas and were published in tables, figures and diagram. Quantitative data was expressed as mean ± SD. A $p<0.05$ was considered as statistically significant.

RESULT

A total number of 73 diagnosed cases of urothelial carcinoma of urinary bladder were included in this study. Supplied specimens were collected by various transurethral resection of bladder tumor (TURBT) biopsy and cystectomy. After histopathological diagnosis and grading of tumor, evaluation of different clinic-pathological parameters with histologic grading done.

Age of the 73 study patients ranges from 28 to 88 years. Most of the cases (22 cases, 30.1%) were found in the fifth decade (51-60) and 21 cases (28.8%) in the sixth decade (61-70). Mean age of the patients was found to be 60.85 (±12.72) year (Figure 1).

Out of the 73 study patients, 58 (79.5%) cases were male and 15 (20.5%) cases were female. Male to female ratio was found 3.9:1 (Figure 2).

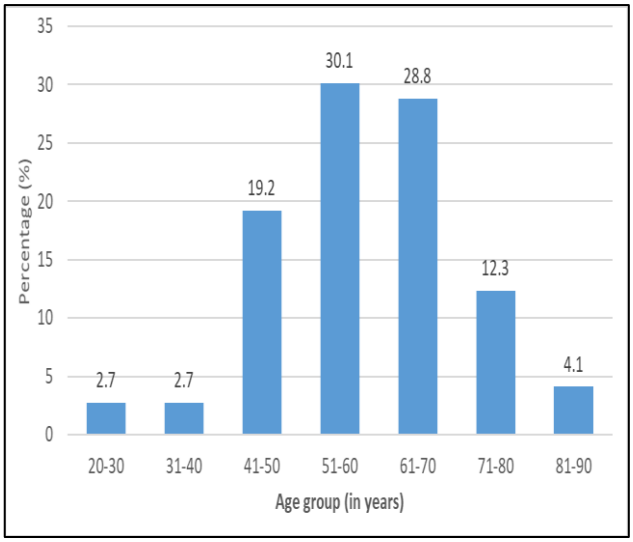

Figure 1: The age distribution of the patients.

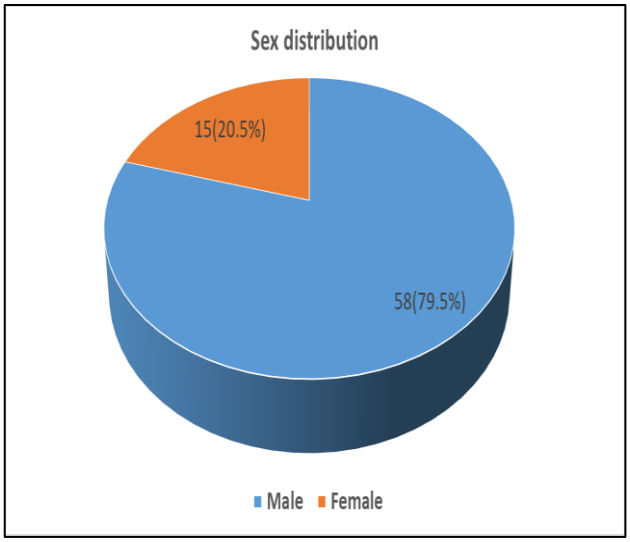

Figure 2: The sex distribution of the patients.

Among the 73 cases, 49 cases (67.1%) were smokers and 24 cases (32.0%) were non-smokers (Table 1).

Table 1: Distribution of the study patients by smoking habit, (n=73).

Smoking habit	N	Percentage (%)
Smoker	49	67.1
Non-smoker	24	32.0
Total	73	100.0

Most of the patients presented with hematuria. It was found in 67 (91.8%) cases. Other features were difficulty in micturition (2 cases, 2.7%), pain in lower abdomen (1 case, 1.4%), passage of fleshy mass per urethra, (1 case, 1.4%) and known case of urothelial carcinoma (2 cases, 2.8%) (Table 2).

Table 2: Distribution of the study patients by chief complaints, (n=73).

Chief complaints	N	Percentage (%)
Hematuria	67	91.8
Difficulty in micturition	2	2.7
Pain in lower abdomen	1	1.4
Passage of fleshy mass per urethra	1	1.4
Known case of UB mass	2	2.7
Total	73	100.0

Most frequent tumor location among 73 cases was the lateral wall of the urinary bladder. It was found in 42 (57.5%) cases. Other locations were posterior wall (18 cases, 24.7%), anterior wall (8 cases, 11.0%) and base of urinary bladder (5 cases, 6.8%) (Figure 3).

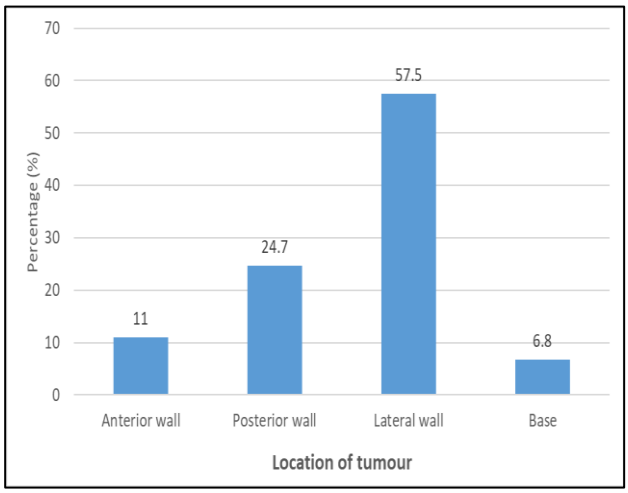

Figure 3: The location of tumor of the patients.

Among 73 cases, 55 (75.3%) cases were reported as high-grade urothelial carcinoma and 18 (24.7%) cases were reported as low-grade urothelial carcinoma according to WHO grading system (Figure 4).

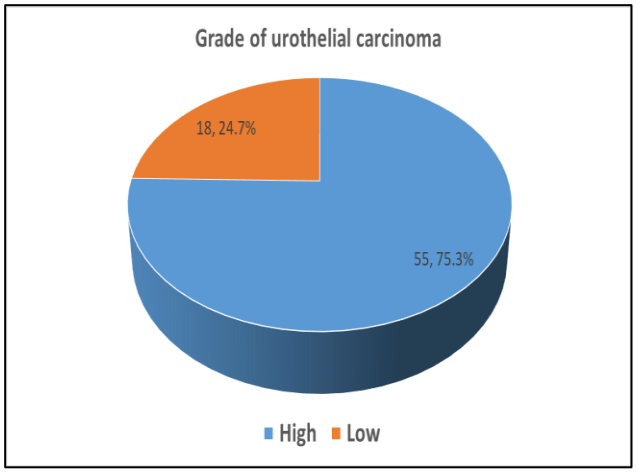

Figure 4: The grade of urothelial carcinoma of the study patients.

Most of the high-grade urothelial carcinoma was found in the 5th and 6th decade (17, 30.9% and 16, 29.1% cases respectively). Most of the low-grade urothelial carcinoma was also found in the 5th and 6th decade (5, 27.8% and 5, 27.8% cases respectively). So, there was no age difference in high-and low-grade urothelial carcinoma (Table 3).

Table 3: Association of grade of urothelial carcinoma with different age group, (n=73).

Age group (years)	Grade of urothelial carcinoma, n (%)		P value
	High, (n=55)	**Low (n=18)**	
20-30	1 (1.8)	1 (5.6)	
31-40	1 (1.8)	1 (5.6)	
41-50	11 (20)	3 (16.7)	
51-60	17 (30.9)	5 (27.8)	
61-70	16 (29.1)	5 (27.8)	
71-80	7 (12.7)	2 (11.1)	
81-90	2 (3.6)	1 (5.6)	
Total	55 (100)	18 (100)	
Mean±SD	61.35±12.20	59.33±14.47	0.564^{ns}

Unpaired student test, ns= not significant.

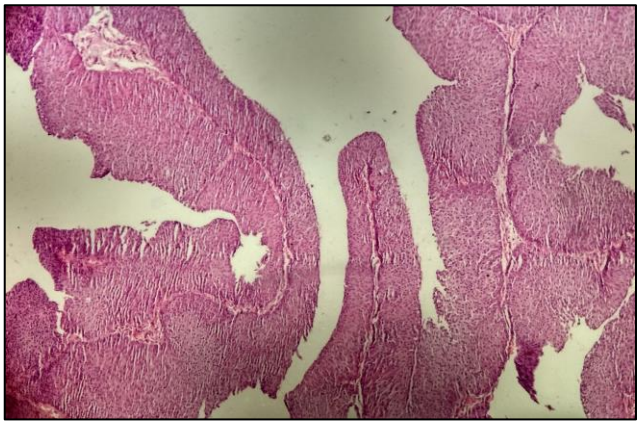

Figure 5: Histopathological section of low-grade urothelial carcinoma (Hematoxylin and Eosin stain, 200 X).

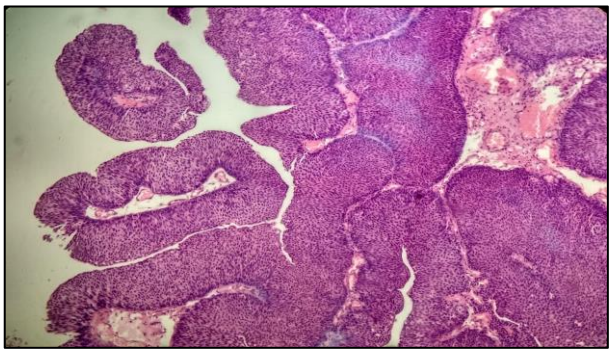

Figure 6: Histopathological section of low-grade urothelial carcinoma (Hematoxylin and Eosin stain, 200 X).

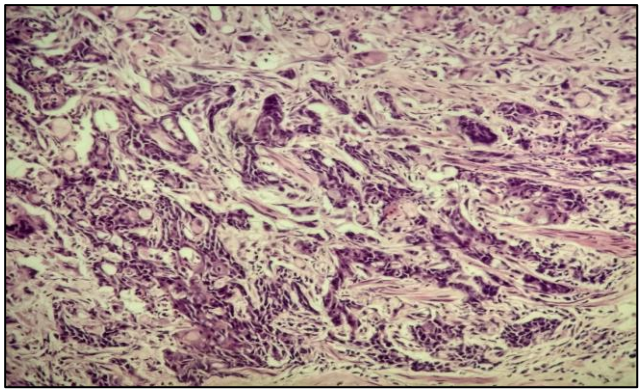

Figure 7: Histopathological section of high-grade urothelial carcinoma (Hematoxylin and Eosin stain, 200 X).

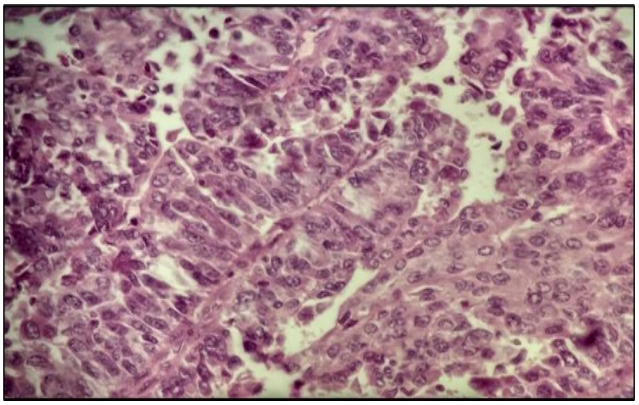

Figure 8: Histopathological section of high-grade urothelial carcinoma (Hematoxylin and Eosin stain, 400 X).

DISCUSSION

A total of 73 cases of urothelial carcinoma of the urinary bladder were included in this study. The histopathological examination was accomplished at the department of pathology in Dhaka medical college. Patients with urothelial carcinoma of urinary bladder recently exposed to chemotherapy were excluded from this study.

Advancing age is one of the risk factors for developing invasive bladder cancer.[7] In the present study it was observed that the age of the majority of cases (30.1% and 28.8%) were found between 51-60 and 61-70 years (respectively). The mean age of the study population was 60.85 (±12.72) years, ranging from 28 to 88 years. Gupta et al showed that the mean age of urinary bladder carcinoma was 60.02±4.4 years (range was 18- 90 years). In another study done by Jawad et al. in 2014, showed that 80% patients of urinary bladder carcinoma fall between the age of 50 to 80 years.[8] In this study most of the high-grade urothelial carcinoma was found in the 5th and 6th decade (17, 30.9% and 16, 29.1% cases respectively). This reflects aggressive tumor behavior in the older population (Figure 1).

In this study out of 73 study patients, 58 (79.5%) cases were male and 15 (20.5%) cases were female. Male to female ratio was found 3.9:1. This result is consistent with those mentioned by Mumtaz et al where they found 81.1% male and 18.9% female with a male to female ratio of 4.2:1.[9] Wu et al also showed that bladder cancer is three to four times more common in men than in women (Figure 2).[10]

Cigarette smoking is the most important risk factor for developing urinary bladder cancer. In this present study, 67.1% of patients had a habit of smoking. Most of the male patients in this study had a habit of cigarette smoking. Chinnasamy et al revealed most bladder cancer patients (71.2%) had smoking habits which is consistent with this study result.[9] Chou et al found 24.9% of urothelial cancer patients had smoking habit (Table 1).[10]

Regarding clinical findings, 91.8% of the cases of this study presented with gross hematuria. Difficulty in micturition and lower abdominal pain were found in 2.7% and 1.4% cases respectively. Similar finding was observed by Chinnasamy et al.[9] Difficulty in micturition may be due to enlarged prostate in older male (Table 2).

Most frequent tumor location among 73 cases was the lateral wall of the urinary bladder. It was found in 57.5% cases. Other locations were posterior wall (24.7%), anterior wall (11.0%) and base of urinary bladder (6.8%). The location was assessed through radiologic and cystoscopic examination (Figure 3).

The tumors in this study were graded according to WHO grading system of urinary bladder carcinoma. It was observed that 75.3% patients were diagnosed as high-grade urothelial carcinoma (HGUC) and 24.7% patients were diagnosed as low-grade urothelial carcinoma (LGUC). Chou et al in their study found 56.8% high grade and 43.2% low grade urothelial carcinoma.[10] Incidence of high-grade urothelial carcinoma was more in our study. In our country the probable cause may be poor economic conditions, lack of knowledge, lack of urological treatment facilities as well as social and religious restrictions especially for female patients which prevent them from utilizing hospital facilities. Moreover, all our cases were collected from Dhaka medical college hospital (DMCH), which is a tertiary level hospital and so patients are admitted with advanced stages of disease or as referred to complicated cases. In another study by Chinnasamy et al in India observed 63.5% high grade and 36.5% low grade carcinoma which were almost similar to our study (Figure 4).[9]

Association of grade of urothelial carcinoma with different age groups was also observed. It showed that most of the high-grade urothelial carcinoma was found in the 5th and 6th decade (17, 30.9% and 16, 29.1% cases respectively). Most of the low-grade urothelial carcinoma was also found at 5th and 6th decade (5, 27.8% and 5, 27.8% cases respectively) of life (Table 3). So, in this

study it was observed that there was no age difference between low- and high-grade urothelial carcinoma.

CONCLUSION

In Bangladesh the incidence rate is increasing day by day due to urbanization, increased use of chemicals and increased tobacco consumption. It is becoming a high health burden in our country. In this study we came to know about the age vulnerable for urothelial carcinoma, the male female ratio, most common chief complaints, common location and some other parameters with the grading of urothelial carcinoma which may help our physician to treat the patients and pathologist to diagnose and assess the biological behavior of urothelial carcinoma.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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