

Histomorphological Pattern of Urinary Bladder Tumour

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A study was conducted in BSMMU to see the histomorphological pattern of urinary tumour. Urinary bladder tumour is one of the common malignancies but very few studies have been carried out in our country. In our observation most of the patients were between 55-64 years (n 43). Male were most commonly affected (95.33%). Haematuria was the most common manifestation; it was present in 93.66% patients. 94(62.66%) patients were smoker. Most common site was lateral wall and trigone was least. Among histological patterns 143(954.33%) were papillary urothelial carcinoma, 4(2.66%) were adenocarcinoma, 2(1.33%) were squamous cell carcinoma and 1(0.66%) was carcinosarcoma. The study finding was almost similar to the other studies of abroad but further study with larger sample to be carried out in future.

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Introduction

Bladder cancer is a disease of middle aged and elderly person. It is 3 to 4 times more common in men than in women.¹

In case of male it is the second most common genitourinary malignancy after prostate.² The median age at diagnosis for transitional cell carcinoma is 69 years in males and 71 years in females.³ It is the 4th most common cancer in male but 8th most common cancer in female in the United States of America.⁴ Moreover the incidence of bladder cancer increases directly with age.

Common risk factors for bladder cancer are smoking, environmental pollutions, occupational exposure to polycyclic aromatic hydrocarbons, diesel smoke and aromatic amines, arsenic poisoning, analgesic abuse, artificial sweeteners, chronic cystitis, cyclophosphamide, pelvic irradiation, schistosomiasis, coffee.^{5,6} Among these cigarette smoking is recognized as the main cause of bladder cancer and accounts for about 50% of cases in developed countries are usually present.^{7,8,9}

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More than 90% of bladder cancer is epithelial in origin, and rest 10% is mesenchymal in origin.¹⁰ Among epithelial tumours 90% is transitional cell carcinoma currently favoured term is urothelial carcinoma. Other rare types include squamous cell carcinoma, adenocarcinoma, small cell carcinoma, sarcomatoid carcinoma and others.^{11,12}

Urinary bladder tumour is common in Bangladesh, but the exact prevalence or incidence record is not available. With repeated attempts to find any published work in various institutes of Bangladesh regarding urinary bladder tumour, no report was found and also no statistics was available either. Fifty four urinary bladder tumour cases were detected from the record of 2006, available at the Urology Department of BSMMU. In Pathology Department of BSMMU 76 cases of urinary bladder tumour were detected out of total 989 malignant tumours in the year 2006 (7.68%). Of them, 71 were male and 5 were female. In National Institute of Cancer Research and Hospital, Mohakhali, Dhaka, 175 cases of genitourinary tumours were reported among 6492 cancer bearing patients in the year 2006. Among the 175 cases of genitourinary tumours 97 cases were bladder tumours (55.42 %) this accounts 1.49% of total cancer patients. Of them 76 were male (78.35%) and 21 were female (21.64%). These cases only represent the tip of an iceberg in Bangladeshi population as because most cases do not come to tertiary care hospital. The frequency appeared to be high and till now no relevant data is available. For these reasons the present study was designed.

Methods

This study was carried out at the Department of Pathology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka during the period of July 2006 to June 2007. A total of 150 cases of urinary bladder tumours of all

ages and both sexes were included in the study.

The cases were collected from Bangabandhu Sheikh Mujib Medical University (BSMMU), Armed Forces Institute of Pathology (AFIP), Dhaka and private hospitals and clinics in Dhaka city. Fresh specimens of surgically resected and transurethral resection of bladder tumour (TURBT) were collected from BSMMU. In most cases, other than BSMMU, paraffin blocks or stained slides were collected along with a completed clinical proforma which was filled after taking history from patients' attendants. The initial diagnosis made at these laboratories were noted in the proforma. The histological diagnosis was made at the Pathology Department of BSMMU. Clinically, sonographically and/or cystoscopically suggestive cases of urinary bladder tumour were included and Patients with non-neoplastic lesion and metastatic tumour of urinary bladder were excluded. Detailed clinical information was obtained by taking history and recorded the information in clinical proforma. Filling up of the clinical proforma was performed in all cases either from patients' attendants statement and/ or from patient's file. Personal information about the patient's symptoms, signs, cystoscopic findings, radiological findings and urine cytology findings were included. The specimens were either surgically resected urinary bladder (cystectomy specimen) or biopsy (TURBT) material. The specimens were collected in a container containing 10% formalin as fixative. The containers were properly labeled with name of the patient, address, and identification number, type of specimen, date and place of operation.

Routine stained sections were first examined under low power and then under high power magnification. The following features were described in the samples obtained at TURBT

(transurethral resection of bladder tumour): (a) Grade (WHO/ISUP, 2004), (b) Configuration (papillary or solid), (c) Depth of penetration, (d) Presence of muscle, (e) Lymphatic invasion, (f) Blood vessel invasion and (g) Changes in adjacent mucosa if present.

Results

A total of 150 cases of urinary bladder tumour were included in the study. Of these 82 cases were collected from BSMMU had full clinical information. The remaining 68 cases were collected from Armed Forces Institute of Pathology (AFIP) and other private centers, of which some cases had incomplete clinical information. This study focuses mostly on the histological examination of the specimen of urinary bladder tumour. The diagnosis was done on routine H&E stained sections by observing the morphological characters of the tumour and the extension of the tumour.

The age range was from 25 years to 95 years with a mean age of 58.5 years. The patients were divided into 8 groups. Out of 150 cases maximum number 43 (28.66%) of patients belonged to age group 55-64 years, these were followed by 42 (28%) cases who were in 45-54 years group, 31 (20.66%) in 65-74 years group, 11 (7.33%) in 75-84 years group, 9 (6%) in 35-44 years group, 7 (4.66%) in 85-94 years group, 6 (4%) in 25-34 years group, 1 (.66%) in 95-104 years group.

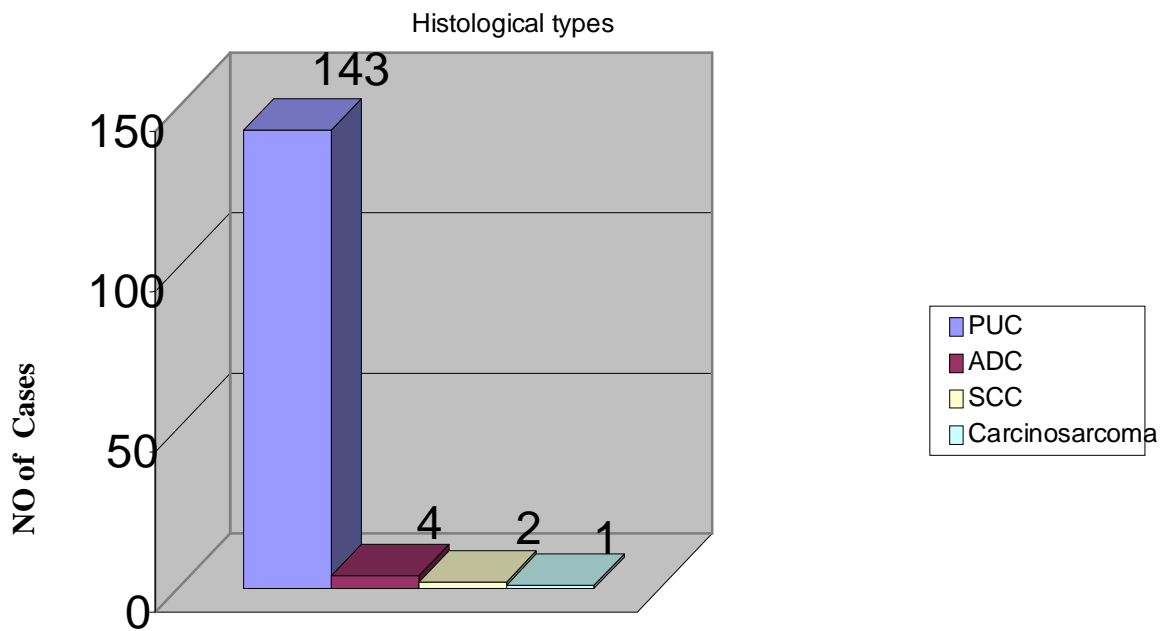
In this study out of 150 cases, 143 (95.33%) cases were male and 7 (4.66%) cases were female with M:F ratio of 20.4:1. The number of patients below the mean age of 58.5 years were 91 (60.66%) in number of which 89 (59.33%) were male and 2 (1.33%) were female. The number of patients above the age of 58.5 years were 59 (39.33%), of which 54 (36.0%) were male and 5 (3.33%) were female. At the time of first consultation almost all 139 (92.66) patients had

haematuria. Along with haematuria 57 (38%) had irritative voiding symptoms and 29 (19.33%) complained of flank pain. The duration of symptoms ranged from 1 month to 12 months. Most of the patients had other symptoms (burning during micturition, hesitancy) prior to haematuria but they came to the doctor when haematuria started. Distribution of tumour among 150 cases were done by direct visualization of bladder mucosa by cystoscopic examination or by ultrasonography. The sites of urinary bladder affected were as follows: 65 (43.33%) cases were in lateral wall, 53 (35.33%) were in posterior wall, 12 (8%) were in neck, 9 (6%) were in trigone and 11 (7.33%) cases had no information about site

The microscopic type of 150 cases of urinary bladder tumour, 143 (95.33%) were papillary urothelial carcinoma, 4 (2.66%) were adenocarcinoma, 2 (1.33%) were squamous cell carcinoma and 1 (.66%) was carcinosarcoma. Of 143 cases of papillary urothelial carcinoma 136 (90.66%) were male and 7 (4.66%) were female. The remaining 7 cases included adenocarcinoma, squamous cell carcinoma and carcinosarcoma and all of them were male. Special staining (per iodidic acid schiff) was done for all the adenocarcinoma cases and all were positive. Among 150 cases of urinary bladder tumour 27 (18%) had squamous differentiation and 123 (82%) had no squamous differentiation. Of these 26 (17.33%) were male and 1 (.66%) was female. This is shown in the figure 1.

Out of 150 cases of urinary bladder tumour only 8 (5.33%) had glandular differentiation and 142 (94.66%) had no glandular differentiation.

Among 150 cases of urinary bladder tumour, muscularis propria was present in 93 (62%) cases and in 57 (38%) cases muscularis propria was absent. This is shown in figure 2.



PUC=Papillary urothelial carcinoma, ADC=Adenocarcinoma, SCC=Squamous cell carcinoma

Figure 1. Histological diagnosis of urinary bladder tumor included adenocarcinoma

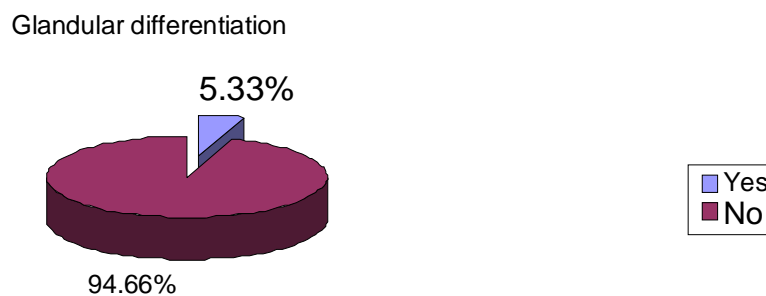


Figure 2. Presence of squamous differentiation

Among 150 cases of urinary bladder tumour 145 (96.66%) were collected by transurethral resection of bladder tumour (TURBT) and 5 (3.33%) were collected by cystectomy. This is shown in Fig 4.11. Out of 150 cases of urinary bladder tumours 94 (62.66%) were smoker, 30 (20%) were non smoker and 26 (17.33%) had no information about it.

Discussion

Bladder cancer is one of the most common human cancers, constituting about 6% and 2% of all cancers among males and females, respectively. Over 90% of all bladder cancers are transitional cell carcinomas, with most of the remainder being squamous cell carcinomas. Smoking and occupational

exposure to aromatic amines and other agents are most prominent among the risk factors identified. The association between inflammation and cancer appears to be stronger for squamous cell than for transitional cell carcinoma.⁶

In this study, cystoscopically and or ultrasonographically suspected 150 cases of urinary bladder tumours were analyzed to find out the histomorphological pattern. Though the frequency of urinary bladder tumour is reasonably high but, literature regarding this is lacking in our country. The mean age in this study of the cases was 58.5 years, the age range was 25-95 years with male to female ratio of 20.4:1. 91 (60.66%) cases were below the mean age of 58.5 years and 59 (39.33%), were above the mean age of 58.5 years. Maximum number of cases 43 (28.66%) were seen in 55-64 years age group. Olivier et al (2005) found mean age at diagnosis of urinary bladder tumour was in the 70-74 years age group for both males and females.¹³

The mean age of urinary bladder tumour in this study is relatively more frequent in lower age group. This difference may be due to small sample size of the present study. It was observed during the present study that there is male preponderance among urinary bladder tumour patients. Out of 150 patients 143 (95.33%) were male and 7 (4.66%) were female with a male: female ratio of 20.4: 1. In a study found that 47000 men and 16000 women were diagnosed with bladder cancer in United States, in that year with a male: female ratio was 2.93:1.¹⁴ The ratio is quite different from the present study. This is probably due to lower incidence of an important risk factor-smoking among female population in our country. Haematuria was the commonest presenting symptoms in this study. The other presenting complaints, irritative voiding symptoms such as dysuria, urgency or frequency in 57 (38%) and flank

pain in 29 (19.33%) were also present in addition to haematuria. Basler et al (2004) found that 80% of patients with bladder cancer had haematuria.¹⁵ In this present study of 150 cases, 139 (92.66%) patients presented with haematuria, which is significantly higher than above mentioned study.

Site distribution was done on the basis of cystoscopic and ultrasonographic findings. The distribution were as follows: lateral wall 65 (43.33%), posterior wall 53 (35.33%), neck 12 (8%), trigone 9 (6%) and in 11 (7.33%) there was no information about site. In a study of 1000 cases Ordonez et al (2004) observed the location were as follows: lateral wall 37%, posterior wall 18%, trigone 12%, neck 11%, ureteric orifices 10%, dome 8%, and anterior wall 4%.¹¹ In both the studies lateral wall involvement is higher than other location.

On histologic examination, only one case was diagnosed as carcinosarcoma. Rests were papillary urothelial carcinoma, adenocarcinoma, and squamous cell carcinoma. Among 150 cases of urinary bladder tumour papillary urothelial carcinoma were 143 (95.33%), adenocarcinoma were 4 (2.66%), squamous cell carcinoma 2 (1.33%) and carcinosarcoma was 1 (.66%). Oosterlinck (2005) found in their study that histopathologically >90% of bladder cancer were urothelial carcinoma, approximately 5% were squamous cell carcinoma, and <2% were adenocarcinoma.¹⁶ This study regarding histopathological diagnosis is nearly similar to the present study.

One case of carcinosarcoma was a 67 years old male, nonsmoker, presented with the complaints of intermittent frank urethral bleeding, increased frequency, pain and burning during micturition for last four months Carcinosarcoma is a rare tumour of

urinary bladder with fewer than 100 documented cases reported to date.^{17,18}

Among 150 cases of urinary bladder tumour 27 (18%) had squamous differentiation. All of these tumours were of high grade. Out of 150, 8 (5.33%) had glandular differentiation. Of these tumours 3 were of low grade and 5 were of high grade. Humphrey (2004) observed that squamous differentiation overall occurs in 21% of urothelial carcinomas, with increasing frequency with increasing grade and stage.¹⁹ Urothelial carcinoma with glandular differentiation is less common, at 6% of all urothelial carcinomas, than those with squamous differentiation. Squamous differentiation may be associated with a poor response to surgery, radiation, and chemotherapy, while the clinical significance of glandular areas is uncertain.¹⁹

A close association between smoking and bladder cancer was observed in this study. Among 150 cases 94 (62.66%) were smokers, 30 (20%) were non smoker and 26 (17.33%) had no information about it. In a study in Sri Lanka, 2004 showed that cigarette smoking is the single most important cause of bladder cancer, accounting for 25% to 65% of all cases. Jankovic et al, 2007 recognized that cigarette smoking is the main cause of bladder cancer and accounts for about 50% cases in developed countries.²⁰ So the actual number of smoker could be higher if full information could be obtained. Other risk factors such as occupational exposure, drug exposure, radiation etc could not be evaluated due to lack of information in these regards.

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