

Original Research Article

Incidence of various urothelial malignancy in patients undergoing transurethral resection of bladder tumour in tertiary care hospital

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ABSTRACT

Background: Urinary bladder lesions are a great health concern as it lies among the top ten most common cancers in the world. These range from benign, harmless lesions that do not recur to life threatening tumors. The present study was undertaken to study incidence of various urothelial cancer in patients undergoing transurethral resection of bladder tumor in tertiary care hospital, as the treatment, follow up and prognosis is highly variable with different subtypes of bladder cancer.

Methods: A hospital based descriptive cross-sectional study was conducted on all patients undergoing transurethral resection of bladder tumor from December 2018 to May 2020 in the Department of General Surgery of Sri Guru Ramdas Institute of Medical Sciences and Research, Amritsar. Based on World Health Organization (WHO) classification incidence of various urothelial malignancy was calculated.

Results: Out of 80 patients with growth urinary bladder, 4 patients (5% of total patient) were diagnosed as case of papilloma, 26 patients (32.5% of total patients) were diagnosed as low grade papillary urothelial carcinoma, 50 patients (62.5% of total patients) were of high grade papillary urothelial carcinoma. There were no case of PUNLMP in our study.

Conclusions: It can be concluded that majority of the patient undergoing transurethral resection of bladder tumor are diagnosed with high grade papillary carcinoma.

Keywords: Papilloma, Low grade TCC, High grade TCC

INTRODUCTION

Urinary bladder cancer accounts for 3.0% of all newly diagnosed cancer and 2.1 % of all cancer deaths.¹ It is sixth most common cancer in men and seventeenth most common cancer in women. The prevalence and mortality of bladder cancer increases dramatically with age, and about two-thirds of cases occur in individuals of 65 years of age and older. Various exogenous and environmental risk factors have been linked with bladder cancer. Smoking and occupational toxicity are the two best known risk factors for bladder cancer. Smokers have a 2 to 4 times higher risk of bladder cancer relative to the general

population. In addition, increased tobacco exposure and degree of inhalation contribute significantly to the development of cancer, while smoking cessation has been associated with an almost immediate decrease in risk. The second most important risk factor for bladder cancer is occupational exposure to aniline colourants and aromatic amines such as 2-naphthylamine and benzidine. The most carcinogenic aromatic amine, benzidine, has been used mainly in the manufacture of dyes and as a hardener in the rubber industry. In gas employees, painters and hairdressers, occupational bladder cancer has also been observed. Analgesic use, urinary tract infections, urinary lithiasis, pelvic radiation, and chemotherapeutic agents

such as cyclophosphamide are other etiological factors involved in the production and progression of bladder cancer.²

The most common presenting sign of bladder cancer is painless hematuria. Patients with carcinoma urinary bladder can also present with irritative voiding symptoms like urinary frequency, urgency, nocturia, dysuria and less commonly with obstructive symptoms such as diminished or irregular urine flow.³ Patients that present in advanced stage may experience symptoms related to metastatic involvement.⁴ The most common form of bladder cancer is urothelial (transitional cell) carcinoma, accounting for around 90% of cases.⁵ These range from benign, harmless lesions that do not recur to fatal, dangerous tumors. Squamous cell carcinoma, adenocarcinoma, small cell carcinoma and mixed histology tumours are non-urothelial bladder cancers.⁶ Although bladder cancer has a reliable and efficient treatment still there is no scientific evidence to support a bladder cancer screening program in the general population or in major smokers or individuals with environmental exposure to bladder carcinogens.⁷ The urine test strip was initially proposed as a micro haematuria screening tool (3 red cells/field), but its positive predictive value is low. A Cochrane library review concluded in 2015 that the consistency of screening techniques was too poor to endorse any recommendations.⁸

If metastatic disease is suspected, a complete blood count, complete metabolic panel, including alkaline phosphatase level and assessment of liver function, are done. Cystoscopy should be done in all patients with gross hematuria or microscopic hematuria. Transurethral resection of the bladder tumour (TURBT) should be done in patients with irregular findings about bladder wash cytology or tissue pathology. This procedure provides important histopathological details required for conclusive diagnosis, staging and grading, and allows for removal of visible tumor and sampling of surrounding muscle to assess depth. If metastatic disease is suspected, chest, abdominal and pelvic imaging with CT or magnetic resonance imaging should be obtained. After the initial resection, further treatment of the urinary bladder carcinoma depends upon histopathological reporting. As per WHO/ISUP classification tumor is classified as Urothelial papilloma, Urothelial neoplasm of low malignant potential, papillary urothelial carcinoma, low grade, papillary urothelial carcinoma, high grade.

The majority of papillomas are single, can recur, however they don't progress.⁹ Patients with papillary urothelial neoplasm of low malignant potential, are at elevated risk of developing chronic or new papillary lesions. These new lesions occasionally are of higher grade and may progress. About 35%, 4% and less than 2% of patients experience tumour recurrence, stage progression and tumor-related mortality, respectively. 68% of patients of papillary urothelial neoplasm of low malignant potential who are tumour free during the first follow up cystoscopy remain

tumour free over a follow up duration of at least 5 years. Papillary urothelial neoplasm of low malignant potential is not associated with metastasis and invasion except in very rare cases.¹⁰ Non-muscle invasive bladder cancer roughly accounts for 70 % to 80% of bladder cancers. 60 % to 70 % of the non-muscle invasive tumours are confined to the bladder mucosa, 20% to 30% show invasion of the subepithelial connective tissue, while 10% are present as carcinoma insitu.¹¹ Trans urethral resection of bladder tumour is the main treatment for non-muscle-invasive bladder cancer, followed by immediate instillation of BCG or intravesical chemotherapy such as mitomycin C, epirubicin, or doxorubicin (Adriamycin). The decision to instil BCG and/or chemotherapy is based on the risk of cancer progression or recurrence. As a full cure, TURBT with immediate instillation of chemotherapy is prescribed in low-risk tumours.¹² There are 50% chances of high risk non-muscle invasive tumor to progress to muscle invasion if treated with turbt alone so to avoid that they are treated with turbt and intravesical bcg or mitomycin.¹³ About 50% of patients with non-muscle-invasive carcinoma in situ will progress to muscle-invasive disease without treatment. Patients with non-muscle invasive tumors, with high-grade T1 and those with high-risk features (example-multiple grade 3 T1 tumors with Tis, disease progression with BCG treatment, increased depth of invasion), should be considered for immediate cystectomy with instillation of BCG or mitomycin C.¹⁴

In view of the aggressive nature of muscle-invasive bladder cancer, prompt diagnosis and treatment are crucial. For all patients with respectable nonmetastatic muscle-invasive bladder cancer, radical cystectomy with bilateral pelvic lymphadenectomy and cisplatin-based neoadjuvant chemotherapy is highly recommended. There are 50% chances of five-year survival rates with cystectomy alone so in patients with high risk or recurrence, neoadjuvant chemotherapy can improve survival.¹⁵ For the selected patient's segmental cystectomy and neoadjuvant cisplatin-based chemotherapy may be appropriate. Preferred treatment for muscle invasive bladder cancer is radical cystectomy in comparison to external beam radiotherapy as it improves survival rate. Radiotherapy is considered as a part of multimodal bladder preserving approach or is used as palliation in patients who are not candidates for cystectomy.¹⁶ For patients with metastatic or unresectable bladder cancer chemotherapy is the preferred treatment.

The present study was undertaken to study incidence of various urothelial cancer in patients undergoing transurethral resection of bladder tumour in tertiary care hospital, as the treatment, follow up and prognosis is highly variable with different subtypes of bladder cancer.

Objectives

To study incidence of various urothelial cancer in patients undergoing transurethral resection of bladder tumour in tertiary care hospital.

METHODS

The descriptive cross-sectional study was conducted in the department of General Surgery of SGRD University, Amritsar on consecutive patients that underwent TURBT from December 2018 to May 2020. In these patients tumour was carefully resected in layers using a resectoscope. The base of the tumour was sent separately for histological examination. Small punch biopsies were taken near to and distant from the primary lesion when CIS suspected. Biopsy was sent in formalin in a well labelled container with a proforma mentioning the site from where biopsy was taken. HPE reports were prepared based on WHO classification: urothelial papilloma, urothelial neoplasm of low malignant potential, papillary urothelial carcinoma, low grade and papillary urothelial carcinoma, high grade.

Study sample technique

All consecutive patients that underwent TURBT from December 2018 to May 2020 in Department of Surgery SGRD University, Amritsar.

Inclusion criteria

All patients with symptoms and radiological finding suggestive of urinary bladder tumour.

Exclusion criteria

Patients not willing for surgery. Patient unfit for surgery. Patient with histopathology showing other variants of urinary bladder cancer.

Ethical approval

Institutional ethical committee.

Statistical analysis

Using Statistical package for social sciences (SPSS) software 23.0 and presented as mean and percentage.

RESULTS

Table 1 shows out of 80 individuals, maximum patients (31.3%) presented in age group of 61-70 years followed by 24 patients in 51-60 years age group. The youngest patient was of age 28 years and the oldest was of age 84 years.

Table 2 shows that out of 80 patients which were diagnosed as case of urinary bladder tumor, 19 (23.8 % of total patients) were female and 61 (76.8% of total patients) were males.

Table 3 shows out of 80 patients of urinary bladder tumor, 71 patients (88.75% of total patients) presented with chief complaint of hematuria.

Table 1: Age distribution in all patients presenting with urinary bladder tumor.

| Age group (in years) | Number | Percentage |
|----------------------|-----------|--------------|
| <40 | 6 | 7.5 |
| 41-50 | 12 | 15.0 |
| 51-60 | 24 | 30.0 |
| 61-70 | 25 | 31.3 |
| 70-80 | 10 | 12.5 |
| >80 | 3 | 3.8 |
| Total | 80 | 100.0 |

Table 2: Gender distribution in all patients presenting with urinary bladder tumor.

| Sex | Number | Percentage |
|---------------|-----------|--------------|
| Female | 19 | 23.8 |
| Male | 61 | 76.3 |
| Total | 80 | 100.0 |

Table 3: Symptoms in the patients presenting with urinary bladder tumor.

| Hematuria | Number | Percentage |
|--------------|-----------|--------------|
| No | 09 | 11.25 |
| Yes | 71 | 88.75 |
| Total | 80 | 100.0 |

Table 4: Incidence of various urothelial malignancy.

| Type | Number | Percentage |
|-------------------|-----------|--------------|
| Papilloma | 4 | 5.0 |
| Low grade | 26 | 32.5 |
| High grade | 50 | 62.5 |
| PUNLMP | 0 | 0.0 |
| Total | 80 | 100.0 |

Table 4 shows out of 80 patients with growth urinary bladder, 4 patients (5% of total patient) were diagnosed as case of papilloma, 26 patients (32.5% of total patients) were diagnosed as low-grade urinary carcinoma, 50 patients (62.5% of total patients) were of high-grade papillary carcinoma. There were no case of PUNLMP in our study.

Table 5: Incidence of various low-grade papillary carcinoma.

| Type | Number | Percentage |
|----------------------------------|-----------|------------|
| Low grade non-invasive | 23 | 88 |
| Low grade lamina invasion | 03 | 12 |
| Low grade muscle invasive | 0 | 0 |
| Total | 26 | 100 |

Table 5 out of 26 patients of low-grade papillary carcinoma, 23 patients were of low grade non-invasive and in 3 patients lamina was invaded but there were no patients of low grade muscle invasive in our study group.

Table 6 shows out of 50 patients of high-grade papillary carcinoma, 8 patients were of high grade non-invasive, 11 patients showed invasion till lamina propria and no deep muscle involvement and 31 patients showed invasion beyond the lamina propria into the muscle.

Table 6: Incidence of various high-grade papillary carcinoma.

| Type | Number | Percentage |
|----------------------------|--------|------------|
| High grade non-invasive | 8 | 16 |
| High grade lamina invasion | 11 | 22 |
| High grade muscle invasive | 31 | 62 |
| Total | 50 | 100 |

DISCUSSION

The study was conducted in the department of General Surgery of Sri Guru Ram Das Institute of Medical Sciences and Research from December 2018 to May 2020. A total of 80 patients with symptoms and investigations suggestive of urinary bladder tumour after following inclusion exclusion criteria underwent TURBT and the histopathological reports were analysed to calculate the incidence of various types.

Maximum patients presented in age group of 61-70 years (25 patients, 31.3% of total patients) followed by 24 patients in age group of 51-60 years (30% of total patients). Least number of cases were observed above 80 years of age. Similar results were seen in studies undertaken by Tomescu et al, Agarwal et al.^{17,18} Maximum patients presented in same decade of life in all these studies.

In this study we observed that maximum patients were males. Out of 80 patients of urinary bladder tumor, 61 patients were males which accounts to 76.3% of total patients and 19 patients were females accounting to 23.8% of total patients thus resulting to male:female ratio 3.2:1. Male predominance was seen in various other studies. Thapa et al¹⁹ in his study concluded that 79.3% of the total patients were males while 20.69% were females resulting into male:female ratio 3.8:1. In study of Tomescus et al, slightly lower incidence was seen in males with male to female ratio of 2.23:1.¹⁷ Thus incidence of urinary bladder cancer is higher in male patients in comparison to female patients.

Majority of patients of urinary bladder tumor presents with the complaints of painless hematuria. In current study 88.75% patients presented with the complaints of

hematuria which was closely correlated with studies conducted by Goyal B et al in which hematuria was seen in 91% of patients and 87% in study conducted by Tomescu et al.^{17,20}

In present study 5% of the total patients presented with papilloma. Similar results were seen in study carried out by Goyal et al, in which 6% of the patients showed papilloma. In a study conducted by Laishram et al, 7.7% patients were diagnosed with papilloma.^{20,21}

Low grade papillary carcinoma forms an important group in classification of urothelial carcinoma. In present study 32% of the total patients showed low grade papillary carcinoma. Similar results were seen in study conducted by Goyal et al, in which 31% of the patients were diagnosed as low-grade papillary carcinoma.²² In a study carried by Sathya and Chhinnaswamy 38.6% of the patients showed low grade papillary carcinoma which was c.²³

In current study 88% of the low-grade papillary carcinoma was non-invasive, 12% of the low-grade carcinoma showed lamina invasion and no cases of muscle invasion was seen whereas in study conducted by Goyal et al, non-invasive papillary carcinoma was seen in 53 % of the patients, lamina propria invasion was seen in 35% of the patients and muscle invasion was seen in 3% of the patients closely related to this study.²⁰

In present study out of 80 patients 50 patients were diagnosed as case of high grade papillary urothelial carcinoma thus accounting to 62.5% of the total patients. In study conducted by Vaidya et al, out of 83 patients, 35 patients showed high grade transitional carcinoma.²⁴ In our study maximum 62.5% patients were diagnosed as case of high-grade papillary carcinoma. Out of these 16% were non-invasive high grade papillary carcinoma and 22% showed lamina propria invasion and 62% of patients of high-grade muscle invasion was seen. Same results were seen in study conducted by Goyal et al, in 66% patients muscle invasion was seen and in 17% patients lamina propria invasion was seen which accounts to 52.24 % of total patients taken.²⁰

Limitations

Incidence of other type of urinary bladder cancer was not calculated in this study. Studies with large sample size are needed.

CONCLUSION

The study was conducted in the department of General Surgery of Shri Guru Ram Das Institute of Medical Sciences and Research from December 2018 to May 2020 to observe the incidence of histopathological variance of urothelial carcinoma. A total of 80 patients participated and underwent transurethral resection of urinary bladder tumor. In this study, maximum number of patients were

diagnosed with high grade papillary carcinoma. Males were more affected than females and majority of the patients presented with complaint of hematuria.

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