Original Research Article

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Analytical study of bladder tumor

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ABSTRACT

Background: Treatment of bladder tumor still provides the romance in Urology. The purpose of this study is to study the prevalence of various types of bladder tumors, to compare various treatment modalities for bladder tumors, to study different presentations of patients with bladder tumor.

Methods: The present study was a prospective analytical study of 30 patients of bladder tumor conducted at Dhiraj General Hospital attached to S.B.K.S Medical College from October 2011 to July 2013. All the details of patients in term of demography, risk factors, symptoms and sign, radiological, endoscopic, histopathological features, various treatment modalities offered, and follow-up of patients were studied and analysed using descriptive statistics.

Results: Maximum number of patients was presented in sixth decade of life. Youngest patient was 30 years old and oldest patient was 77 years old. 80% patients were male, and 20% patients were female. History of smoking was present in 22 patients, history of exposure to occupational hazards was present in 4 patients and only 2 patients had positive family history. Majority 93.3% patients were presented with haematuria and 16 patients had anaemia. 15 patients had high grade muscle invasive TCC, followed by 10 patients with low grade non-muscle invasive TCC. 3 patients were having low grade non-muscle invasive SCC, 1 patient was having high grade muscle invasive SCC and 1 patient was having high grade non-muscle invasive TCC.

Conclusions: The findings of the study conclude that TURBT followed by intravesical instillation of BCG gave good results in patients with low grade and high grade non-muscle invasive tumor. For muscle invasive tumor radical cystectomy with urinary diversion is the ideal treatment but TURBT followed by radiotherapy has also given good results with fewer side effects.

Keywords: Bladder tumor, Cystectomy, Transurethral resection of bladder tumor

INTRODUCTION

Tumours in bladder were one of the most common malignancies prevailing world-wide. They are majority seen in men and has been associated with many etiological factors which include cigarette smoking, bacterial and parasitic infections, occupational exposure to certain chemicals, viral, bacterial and parasitic infections, radiation therapy and chemotherapy.^{1,2}

Clinically the disease can be evaluated by detailed demographic characteristics, physical examination,

ultrasonography, urine cytology followed by cystoscopy and transurethral resection of bladder tumours.³ Bladder cancer may cause pain, difficulty in urinating, haematuria. Other symptoms can potentially develop during later stages of the disease. Most of the bladder tumors are superficial in nature.

The rate of reoccurrence can be as high as 70% and in 10-15% cases, it progresses to muscle invasive disease.⁴ Radical cystectomy was considered as the standard therapy for the patients with bladder tumor with expected 5-year survival rate of 45–60%. Radiotherapy was deemed to be an alternative, particularly in less fit patients but the reoccurrence rate was 50%. Hence the combination treatment with ionizing radiation and chemotherapeutic agents (chemoradiation) was believed to be the choice of treatments to improve the bladder preservation and quality of life.^{5,6}

This study will help us to find the prevalence of various types of bladder tumor, to compare various treatment modalities for bladder tumors and to study different presentations of patients with bladder tumor.

METHODS

This prospective study was conducted at Dhiraj General Hospital attached to S.B.K.S Medical College from October 2011 to July 2013. Patients presented with haematuria or other lower urinary tract symptoms who were diagnosed with bladder tumor were examined thoroughly and admitted for further evaluation according to diagnostic protocol.

Patients were undergone CT IVU after detecting bladder mass on USG. 30 patients diagnosed with bladder tumor were included in the study. Patients with severe co morbidity, and patients who did not give consent for treatment were excluded.

All the patients with bladder tumor underwent TURBT. Based on histopathology report further treatment was given. Patients with low grade & high grade non-muscle invasive tumors superficial were given 6 cycles of intravesical BCG vaccination. Patients with muscle invasive bladder tumors underwent cystectomy or given radiotherapy. After 3 months repeat cystoscopy was done to look for the recurrence.

Patients with non-muscle invasive tumors and disease free at 3 months underwent USG at 6 months follow up to look for recurrence. Patients with recurrence at 3 months again underwent cystoscopy at 6 months follow up to look for recurrence. In patients with high-risk tumours, cystoscopy every 3 months during the first 2 years. Cystoscopy should then follow every 4 months in the third year, every 6 months thereafter for up to 5 years and then yearly.

All the details of patients in term of demography, risk factors, symptoms and sign, radiological, endoscopic, histopathological features, various treatment modalities offered, and follow-up of patients were studied and analysed using descriptive statistics.

RESULTS

In this study total 30 patients were studied, out of which maximum patients were in the age group of 51 - 60 years. Youngest patient was 30 years old and oldest patient was 77 years old. 24 (80%) patients were male and 6 (20%) patients were female (Table 1).

Table 1: Demographic characteristics of the study population.

Variables	Number of patients (n=30)	%
Age		
≤40	2	6.7
41-50	7	23.30
51-60	9	30.0
61-70	8	26.7
>70	4	13.3
Sex		
Females	6	20.0
Males	24	80.0

As given in Table 2, history of smoking was seen in 22 patients and 8 patients were non-smokers. 4 patients were having history of exposure to occupational hazards. One patient was dye worker and three were paint industry worker. Analgesic abuse was present in 4 patients while 26 patients had no such history. Similarly, history of chronic cystitis was present in 11 patients and 19 patients had no such history. Only 2 patients had positive family history rest 28 patients had no positive family history. In this study out of 30 patients, only 2 patients were not having haematuria rest 28 patients presented with haematuria.

Table 2: Distribution of study population as per riskfactors.

Risk factors	Number of patients (n=30)	%
Habit of smoking		
Smokers	22	73.34
Non-smokers	8	26.64
Occupational hazards		
Absent	26	86.7
Dye worker	1	3.3
Paint industries worker	3	10.0
Analgesic abuse		
Present	4	13.3
Absent	26	86.7
Chronic cystitis		
Present	11	36.7
Absent	19	63.3
Family history		
Present	2	6.7
Absent	28	93.3

Only 11 patients had complaint of frequency, 10 patients were having complaint of urgency and dysuria was present in 20 patients. 9 patients were complained about pain in flank region and complaint of bone pain was present only in 6 patients (Table 3).

As per the data shown in Table 4, 16 patients were anaemic and rest 14 had normal haemoglobin level. On examination of urine samples findings revealed that maximum number of patients (i.e 19) had 5–10 pus cells

in urine, followed by 8 patients who had <5 pus cells were present in urine, followed by 3 patients who had >10 pus cells. Out of 30 patients, 29 patients had RBCs in urine. Maximum number of patients (i. e 15) had 5-10 RBCs in urine, 7 patients had plenty of RBCs in urine. Only 1 patient's urine was negative for RBCs.

Table 3: Clinical characteristics of study population.

Clinical characteristics	Number of patients (n=30)	%
Haematuria		
Present	28	93.3
Absent	2	6.7
More frequency o	f urine	
Present	11	36.7
Absent	19	63.3
Urgency		
Present	10	33.3
Absent	20	66.7
Dysuria		
Present	20	66.7
Absent	10	33.3
Bone pain		
Present	6	20.0
Absent	24	80.0
Pain in flank		
Present	9	30.0
Absent	21	70.0

All the 30 patients underwent for urine cytology examination. Of them 21 patients had positive urine cytology report. Hydronephrosishydroureter (HNHU) was present in 5 patients.

Three patients were having it on left side and two patients had it on right side. Most of the bladder tumors were involved in right lateral wall of bladder and least involved site was left VUJ.

In the study population, 19 tumours were found to be sessile in nature, out of which 14 were muscle invasive and 5 were non-muscle invasive tumors. 11 tumors were pedunculated out of which 9 were non-muscle invasive and 2 were muscle invasive tumors.

In this study out of 30 patients, 26 patients underwent TURBT only, 3 patients underwent TURBT followed by partial cystectomy and one patient underwent TURBT followed by radical cystectomy with ileal conduit (Table 5). Table 6 shows the treatment received by the study population based on type of tumours diagnosed. Out of 15 patients of high grade muscle invasive TCC, 12 patients underwent TURBT+radiotherapy and rest 3 patients underwent partial cystectomy. Out of which only 1 patient had taken radiotherapy and rest 2 patients refused to take radiotherapy. 10 patients with low grade non-muscle invasive TCC had TURBT+immunotherapy. Similarly, 3 patients with low grade non-muscle invasive

SCC had TURBT+immunotherapy, 1 patient with high grade non-muscle invasive TCC underwent the same treatment.

Table 4: Distribution of study population as per
diagnostic analysis.

		Number of patients (n=30)	%	
Anaemia	(Hb <10)			
Present		16	53.3	
Absent		14	46.7	
Number	of pus cells			
Nil		0	1	
<5		8	4	
5-10		19	15	
>10		3	3	
Plenty		0	7	
Urine cyt	ology report			
Negative		9	30.0	
Positive		21	70.0	
Hydronephrosis- hydroureter (HNHU)				
Absent		25	83.3	
LT preser	nt	3	10	
RT present		2	6.7	
Site of bl	adder mass			
Base of bl	adder	4	13.33	
Fundus of	bladder	6	20.0	
Left latera	ıl wall	7	23.3	
Left VUJ		2	6.7	
Right lateral wall		8	26.6	
Right VUJ		3	10.0	
Tumor characteristic				
Muscle	Sessile	14	46.6	
invasive	Pedunculated	2	6.7	
Non-	Sessile	5	16.7	
muscle invasive	Pedunculated	9	30	

Table 5: Distribution of study population according tosurgery conducted.

Surgery	Number of patients (n=30)	%
TURBT only	26	86.7
TURBT with partial cystectomy	3	10
TURBT with radical cystectomy with ileal conduit	1	3.3

1 patient with high grade muscle invasive SCC underwent radical cystectomy and patient was advised to take post op radiotherapy but patient refused to take it. In present study out of 30 patients 26 patients were operated for TURBT, 3 patients underwent partial cystectomy and 1 patient underwent radical cystectomy. Out of 26 operated patients for TURBT, 2 patients developed extra peritoneal bladder perforation, 1 patient had prolonged haematuria and 1 patient developed post-operative stricture urethra. In patients operated for partial

cystectomy one patient developed post- operative urinary leak and wound gaping.

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Type of tumor	TURBT + Immunotherapy	TURBT +Radiotherapy	Partial cystectomy + Radiotherapy	Partial cystectomy	Radical cystectomy	Total
High grade muscle invasive TCC	0	12	1	2	0	15
High grade non-muscle invasive TCC	1	0	0	0	0	1
Low grade non-muscle invasive TCC	10	0	0	0	0	10
Low grade non-muscle invasive SCC	3	0	0	0	0	3
High grade muscle invasive SCC	0	0	0	0	1	1

One patient which was operated for radical cystectomy developed wound gaping and electrolyte disturbances. As tabulated in Table 8, Out of 30 patients, 20 patients had disease free follow up of 6 months, 7 patients lost for follow up and 3 patients had recurrence.

Table 7: Distribution of study population based on
complications.

Complications	Number of patients (n=30)	%
After TURBT		
Extraperitoneal bladder perforation	2	6.66
Stricture urethra	1	3.33
Prolonged haematuria	1	3.33
After cystectomy		
Urinary leak	1	3.33
Wound gaping	2	6.66
Electrolyte imbalance	1	3.33

Out of 3 patients who had recurrence 2 patients were defaulters in radiotherapy and one patient had High grade non-muscle invasive tumor who had taken 6 cycles of immunotherapy.

Table 8: Distribution of study population according to
6 months follow-up.

Follow-up	Number of patients (n=30)	%
Lost for follow up	7	23.3
Disease free	20	66.7
Recurrence	3	10.0

DISCUSSION

A total number of 30 patients with clinical history of haematuria, other lower urinary tract symptoms and diagnosed with bladder tumor were included in this study. It is an analytical prospective study of bladder tumor, conducted to study the prevalence of various types of bladder tumors, to compare various treatment modalities for bladder tumors, to study different presentations of patients with bladder tumor. The patients in this study were in the age group of 30-77 years with the mean age of 56.53 years. The maximum numbers of patients were in the sixth decade of life constituting 30.0%. Male preponderance was seen in present study (M:F-4:1). These findings related to age and sex were similar to the studies of Varkarakis et al and Sen et al.^{7,8} Cigarette smoking has been considered as major risk factor for bladder tumours. Smokers have four-fold increased incidence of developing bladder tumours.⁹ The risk increases as the frequency and duration of smoking levels increase and typically decreases in former smokers compared to current smokers.¹⁰ In present study, 22 patients (73.4%) were smokers. These findings were in accordance with the studies of Chinnasamy et al.¹¹

In present study 13.3% of patients were having history of exposure to occupational hazards. Out of which 10% of patients were working in paint industry and one patient was working in hair dye industry. Similar study was done by Gago-Dominguez et al to know the role of various occupational hazards in bladder tumor.¹² They came to the conclusion that 20% of bladder tumors are due to exposure to various occupational hazards. Out of which 8% of patients were paint industry worker, 5% of patients were rubber industry worker, 3% of patients were associated to working with hair dye. In the present study, out of 30 patients were having history of chronic cystitis. These findings were comparable to the reports of Kantor et al and Srivastava et al.^{13,14}

Consumption of large quantities (5 to 15 kg over a 10year period) of analgesic is associated with an increased risk for TCC of the renal pelvis and bladder. The latency period may be longer for bladder tumors than for renal pelvic tumors, whose latency period may be as long as 25 years. In present study 4 patients (13.33%) with bladder tumor were having history of analgesic abuse. This was comparable to the studies of Piper et al in which 9.77% patients were having history of analgesic abuse.¹⁵ Strong epidemiologic evidence does not exist for a hereditary cause of most cases of bladder cancer. In present study 2 (6.7%) patients were having significant positive family history. This was in accordance with the findings of Arlene et al and Cristiane et al.^{16,17} Haematuria is the most common presenting complaint of the patients with bladder tumor. In present study 28 (93.3%) patients were having complaint of haematuria. Similar observations were also made by Burch et al in 95.34% of patients and by Badjatia et al in 97.42% of patients.^{18,19}

Urine cytology is cheap, easily available, easy to perform investigation used in patients with bladder tumor. In present study 21 (20%) patients had positive urine cytology report. In a study performed by Boman et al, 64.42% of patients with bladder tumor were having positive urine cytology report.²⁰

In present study most, common site of bladder was right lateral wall of bladder (26.6%) followed by left lateral wall of bladder (23.3%). This was in contrast to the findings of Donald et al. In his study, most common site of bladder tumor was left lateral wall of bladder (28.42%) followed by right lateral wall of bladder (24.70%).²¹ In the present study 15 (50%) patients were having high grade muscle invasive TCC and 10 (33.3%) patients were having low grade non-muscle invasive TCC. This was contrary to the observations of Lucia et al in which 28.80% of patients were having high grade muscle invasive TCC and 57.60% of patients were having low grade non-muscle invasive TCC.²²

In present study, according to treatment protocol all nonmuscle invasive tumors were treated with TURBT followed by intravesical BCG therapy. All 14 patients with non- muscle invasive bladder tumors were given adjuvant intravesical BCG, only one patient with high grade non-muscle invasive tumor came with recurrence at 6 months follow-up, 3 patients lost on follow-up and rest 10 patients were disease free at 6 months follow-up. A study performed by Spencer et al on a large group of patients in which all patients with non- muscle invasive tumors were given adjuvant intravesical BCG therapy, in this study 93.40% of patients were disease free at 6 months follow up.²³ In present study, 16 patients were having muscle invasive bladder tumors. Out of which 15 patients were under went bladder preserving treatment and one patient had undergone radical cystectomy with ileal conduit. Out of 15, 12 patients had TURBT followed radiotherapy, one patient underwent partial hv cystectomy followed by radiotherapy, two patients under went partial cystectomy only and refused to take radiotherapy. One patient had undergone radical cystectomy with ileal conduit. In a similar study conducted by Hulshof et al all muscle invasive tumor underwent bladder preserving treatment and 88.75% of patients were disease free at 6 months follow-up.24

In present study series after TURBT, in 26 patients 2 (6.66%) patients developed extra peritoneal bladder perforation, 1 (3.33%) patient had prolonged haematuria and 1 (3.33%) patient developed post- operative stricture urethra. The rate of complication in patients who underwent cystectomy was 13.33%. Similar findings were also noted by Alan et al in which 11.40% of patients developed complications that are operated by TURBT.²⁵ Out of which 7.60% of patients developed extraperitoneal bladder perforation and 3.80% of patients developed prolonged haematuria. In a study by Angeline et al the rate of complication in cystectomy underwent patients was 27.8%.²⁶.

CONCLUSION

The findings of the study reveal that males of age group 51-60 years were more affected with the incidence of bladder tumor. This may be because of their smoking habits and exposure to occupational hazards. The common mode of presentation in patients with bladder tumor was haematuria. History of smoking was the main risk factor for developing bladder carcinoma. Most common type of bladder tumor is transitional cell carcinoma. TURBT followed by intravesical instillation of BCG is treatment of choice in patients with low grade & high grade non-muscle invasive tumor. For muscle invasive tumor radical cystectomy with urinary diversion is the ideal treatment but TURBT followed by radiotherapy has also given good results with fewer side

effects. Radical cystectomy is the standard treatment in case of muscle invasive bladder tumor.

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