URINARY BLADDER CARCINOMA CLINICOPATHOLOGICAL CORRELATION

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ABSTRACT

Introduction: Urinary bladder neoplasia is a leading cause of death and disability across the world. In 90% of bladder cancers, urothelial carcinoma is the primary tumor. The aim of study is to characterize the clinical and pathological aspects of newly diagnosed cases of bladder cancer that were verified by histological examination. Method: Cross-sectional study of 100 bladder cancer patients. Age, gender, tumor type, grade, and bladder cancer invasion were prospectively investigated. After initial clinical examination and routine hematological, biochemical, and radiological tests, all patients received cystoscopy and transurethral excision (TURBT). None of the patients had a TURBT before hospitalization. Papillary tumors were excised from each patient. Solid muscle invasive tumors are completely excised or debunked. Cystoscopy and histopathology were compared. Data were acquired and updated at hospital discharge and urology outpatient clinic follow-up. **Results:** the study included 100 bladder cancer patients. Patients averaged 62.52 ±14.45 years old, and 30% were beyond 65 years (65 – 74). 85 males, 15 females. 19 cases had both papillary and squamous cell carcinomas. 70 high-grade tumors, 30 low-grade. Invasive carcinomas were discovered in 88 cases: 60 (68.2%) stromal invasive cancers, 9 (10.2%) stromal & muscle-invasive cancers, 7 (8%) stromal & lympho-vascular invasive cancers, and 12 (13.6%) stromal & muscle & lympho-vascular invasive cancers. Statistically significant associations between tumor invasion status, patient age, and tumor grade. High grade bladder cancer was more common in persons aged 75 and with squamous cell carcinoma. **Conclusion:** Most patients (30%) were aged (65–74) years. 85 men, 15 women. Histopathology revealed 74 papillary cell carcinomas. 70 tumors were high-grade and 30 low-grade. Other 88 patients had invasive carcinomas; 60 (68.2%) were stromal. Among 55-64-year-olds with high-grade bladder malignancies, 69 (98.6%) were invasive. High grade bladder cancer was more common in persons aged 75 years and with squamous cell carcinoma.

KEYWORDS: Urinary bladder, carcinoma, clinical, pathological, correlation.

INTRODUCTION

Urinary bladder neoplasia is a leading cause of death and disability across the world.[1] In 90% of bladder cancers, urothelial carcinoma is the primary tumor.[2,3] Cancer of the urinary bladder is the second most prevalent genitourinary malignancy, after prostate cancer, and the sixth most frequent cancer overall,[4] Bladder neoplasms make up 6% of all cancer cases in males and 2% of all cancer cases in women. Patients older than 50 years old account for the vast majority of cases.[5,6] There is a greater incidence of these malignancies in industrialized nations than in less developed ones. More than 75% of patients have gross and microscopic hematuria, making it the most prevalent symptom. About 80% of patients are between the ages of 50 and 80,[6] and males are more likely to be afflicted than women. Patients with bladder tumors rely mostly on cystoscopy for diagnosis.[1] Therapeutic transurethral excision of the bladder tumor provides the tissue needed for histological diagnosis, allowing evaluation of differentiation status and tumor invasion depth, both of which are important in elaborating a diagnosis and gauging prognosis.[2] There is a continuum of clinical severity in bladder carcinoma, from localized to widespread illness. Ten percent to fifteen percent of patients with bladder cancer will develop muscle-invasive illness,[7] however the majority of cases will be diagnosed at a superficial stage (Ta-T1). Bladder cancer rates and trends might differ greatly between regions. Survival rates and prognoses for bladder cancer patients are affected by age, gender, and race.[8] Bladder carcinoma is the most prevalent

urological malignancy in both sexes in Pakistan,[9] and is in the top 10 malignancies in males. However, the literature provides an insufficient description of its clinicopathological aspects.[9] The aim of study is to characterize the clinical and pathological aspects of newly diagnosed cases of bladder cancer that were verified by histological examination.

METHOD

Cross sectional study of 100 patients with bladder carcinoma, study have done in medical city in Baghdad from period January 2021 to July 2022. Age of patients, gender, tumor type, grade of tumor and invasion of bladder carcinoma were studied prospectively. All patients had cystoscopy and transurethral excision of bladder tumour after initial clinical evaluation and standard haematological, biochemical, and radiological investigations (TURBT). All patients received in-hospital care, and none of them had ever had a TURBT before. Each patient had their papillary tumour surgically removed. Complete excision or extensive debulking of the exophytic tumour was performed in patients of solid muscle invasive tumours. Comparisons were made between the cystoscopic tumour configuration and the histo-pathological findings. At the time of hospital release and during follow-up at the urology out-patient clinic, data were gathered and prospectively updated. Statistical analysis: The data analyzed using Statistical Package for Social Sciences (SPSS) version 25. The data presented as mean, standard deviation and ranges. Categorical data presented by frequencies and percentages. The significance of difference of different percentages (qualitative data) were tested using Pearson Chi-square test (χ^2-test) with application of Yate's correction or Fisher Exact test whenever applicable. A level of P – value less than 0.05 was considered significant.

RESULTS

This study included a total of 100 adult patients with bladder carcinomas. The mean age of the patients was 62.52 ± 14.45 years, and the highest proportion of the studied patients (30%) were found in the age group of (65 – 74) years. Regarding gender, there were 85 males versus 15 females. According to the histopathological examinations, 74 cases were papillary cell carcinomas, 7 cases were squamous cell carcinomas, and the remaining 19 cases were papillary and squamous cell carcinomas. Concerning tumor grade, 70 tumors were classified as high grade and 30 tumors as low grade. Regarding invasion status, non-invasive carcinomas were detected in 12 cases while invasive carcinomas were detected in the other 88 cases; 60 (68.2%) stromal invasive cancers, 9 (10.2%) stromal & muscle-invasive cancers, 7 (8%) stromal & lympho-vascular invasive cancers, and 12 (13.6%) stromal & muscle & lympho-vascular invasive cancers (Table 1).

Table 1: Sociodemographic and clinical characteristics of the study patients.

Patients' characteristics	No. (n= 100)	Percentage (%)
Age (Years)		
< 45	9	9.0
45 - 54	22	22.0
55 - 64	20	20.0
65 - 74	30	30.0
≥ 75	19	19.0
Gender		
Male	85	85.0
Female	15	15.0
Tumor Type		
Papillary	74	74.0
Squamous	7	7.0
Papillary & Squamous	19	19.0
Tumor Grade		
High Grade	70	70.0
Low Grade	30	30.0
Invasion		
Yes	88	88.0
No	12	12.0
Site of invasion	n= 88	
Stromal	60	68.2
Stromal & Muscular	9	10.2
Stromal & Lympho-vascular	7	8.0
Stromal & Muscular & Lympho-vascular	12	13.6

In the current study, a statistically significant association (P < 0.05) was found between the invasion status of tumors and the age of patients, as all of 20 patients aged (55 – 64) years were with invasive bladder cancers. Also, there was a statistically significant association between the invasion status and tumor grade, as 69 (98.6%) of the bladder cancers that classified as high grade were invasive cancers. Gender of the patients and tumor type were not significantly associated (P ≥ 0.05) with invasive status of bladder carcinoma (Table 2).

Table 2: Distribution of study patients by grading of tumors and certain clinical characteristics.

Patients' characteristics	Invasion		Total (%) n= 100	P- Value
	Yes (%) n= 88	No (%) n= 12		
Age (Years)				
< 45	3 (33.3)	6 (66.7)	9 (9.0)	0.001
45 - 54	21 (95.5)	1 (4.5)	22 (22.0)	
55 - 64	20 (100.0)	0 (0)	20 (20.0)	
65 - 74	26 (86.7)	4 (13.3)	30 (30.0)	
≥ 75	18 (94.7)	1 (5.3)	19 (19.0)	
Gender				
Male	74 (87.1)	11 (12.9)	85 (85.0)	0.687
Female	14 (93.3)	1 (6.7)	15 (15.0)	
Tumor Type				
Papillary	62 (83.8)	12 (16.2)	74 (74.0)	0.091
Squamous	7 (100.0)	0 (0)	7 (7.0)	
Papillary & Squamous	19 (100.0)	0 (0)	19 (19.0)	
Tumor Grade				
High Grade	69 (98.6)	1 (1.4)	70 (70.0)	0.001
Low Grade	19 (63.3)	11 (36.7)	30 (30.0)	

It was clear that high grade of bladder cancers was significantly associated (P < 0.05) with patients' age and pathologic type of cancers. The proportion of high grade bladder cancer was significantly higher among the patients aged ≥ 75 years (94.7%, P= 0.043), and significantly higher among the patients who had squamous cell carcinoma (100%, P= 0.013). Gender of the studied patients revealed no significant association (P ≥ 0.05) with tumor grade (Table 3).

Table 3: Distribution of study patients by invasion status and certain clinical characteristics.

Patients' characteristics	Tumor Grade		Total (%) n= 100	P- Value
	High (%) n= 70	Low (%) n= 30		
Age (Years)				
< 45	4 (44.4)	5 (55.6)	9 (9.0)	0.043
45 - 54	16 (72.7)	6 (27.3)	22 (22.0)	
55 - 64	14 (70.0)	6 (30.0)	20 (20.0)	
65 - 74	18 (60.0)	12 (40.0)	30 (30.0)	
≥ 75	18 (94.7)	1 (5.3)	19 (19.0)	
Gender				
Male	13 (86.7)	2 (13.3)	85 (85.0)	0.220
Female	57 (67.1)	28 (32.9)	15 (15.0)	
Tumor Type				
Papillary	46 (62.2)	28 (37.8)	74 (74.0)	0.013
Squamous	7 (100.0)	0 (0)	7 (7.0)	
Papillary & Squamous	17 (89.5)	2 (10.5)	19 (19.0)	

DISCUSSION

Urinary bladder neoplasms are among the most frequent urological malignancies. They represent a diverse collection of tumors with a wide range of phenotypes and behaviors.[10] According to research published across the world, the vast majority (95%) of bladder tumors originate in the epithelium. Approximately 90% of epithelial tumors are made up of urothelial (transitional) type cells and are hence referred to as urothelial (transitional cell) tumors. Squamous and glandular carcinomas also occur.[11] In current study the mean age of the patients was 62.52 ± 14.45 years, and the highest proportion of the studied patients (30%) were found in

the age group of (65 – 74) years. Regarding gender, there were 85 males versus 15 females. This is similar to other studies stated that the greatest incidence of bladder tumors occurred between the ages of 61 and 70, with a median age of presentation of 65 (range, 16-88 years). Eighty-two percent (81.93%) of bladder tumors were found in males, while just fifteen instances (18.07%) were found in females. There were 4.5 males for every 1 female.[12] Bladder cancer is seen mainly in men with male female ratio of 3:1.[13] It can occur at any age but the peak prevalence is among those 60–70 years of age.[14] According to the histopathological examinations, 74 cases were papillary cell carcinomas, 7 cases were squamous cell carcinomas, and the remaining 19 cases were papillary and squamous cell carcinomas. Concerning tumor grade, 70 tumors were classified as high grade and 30 tumors as low grade. Regarding invasion status, non-invasive carcinomas were detected in 12 cases while invasive carcinomas were detected in the other 88 cases; 60 (68.2%) stromal invasive cancers, 9 (10.2%) stromal & muscle-invasive cancers, 7 (8%) stromal & lympho-vascular invasive cancers, and 12 (13.6%) stromal & muscle & lympho-vascular invasive cancers, this is also similar to other study show that 81 individuals had superficial bladder cancer (pTa in 3 patients and pT1 in 78 patients). 140 (63.3%) individuals had muscle-invasive bladder cancer. 71 muscle-invasive individuals had T2 bladder tumor. 59 patients had T3 tumors, 10 T4 tumors. 111 (51.5%) individuals had a single bladder tumor, whereas the remainder had many. 96% of superficial tumors were papillary, and just 3.4% were papillary and solid during cystoscopy. Muscle-invasive tumors were 75% solid. In 28 (20%) individuals, tumors were solid and papillary, and in 6 (4.2%), papillary. Most superficial tumors were GI, GII, and GIII in 47, 30 and 4 individuals, respectively. Muscle invasive tumors were GI, GII, and GIII in 8, 72, and 60 patients respectively.[15] In the current study, a statistically significant association (P < 0.05) was found between the invasion status of tumors and the age of patients, as all of 20 patients aged (55 – 64) years were with invasive bladder cancers, this is similar to other study also state that most age group significant with invasion is (55-64) years old.[16] Also, there was a statistically significant association between the invasion status and tumor grade, as 69 (98.6%) of the bladder cancers that classified as high grade were invasive cancers, WHO (2004) and ISUP's grading of urothelial tumours show that high grade TCC is more common than low grade TCC. There were 35 cases (43.21%) of high grade TCC and 32 cases (39.51%) of low grade TCC. This could be because the person came in late.[12] Mahesh et al.[17] also found that high grade TCC was more common (53.57%) than low grade TCC (42.85%). Studies by Laishramet al.[18] and Ahmed et al.20, on the other hand, showed that low grade TCC was more common than high grade TCC (53.85% and 44%, respectively) compared to 26.41 and 29.5%, respectively. Gender of the patients and tumor type were not significantly associated (P ≥ 0.05) with invasive status of

bladder carcinoma, this agreed with Nik et al.[16] also state gender of the patients and tumor type were not significantly associated. The proportion of high grade bladder cancer was significantly higher among the patients who had squamous cell carcinoma (100%, P= 0.013). similar to other study stated that Transitional cell carcinoma (TCC) was diagnosed in 67 cases in this study.[6] Of these, 43 (64.18%) were superficial /or in the early stage (pTa and pT1) while 24 (35.82%) were muscle invasive (pT2). In studies by Gupta et al. and Laishram et al. muscle invasion was seen in 26% and 30.77%, respectively,[18,5]

CONCLUSION

The mean age of the patients was 62.52 ± 14.45 years, and the highest proportion of the studied patients (30%) were found in the age group of (65 – 74) years. Regarding gender, there were 85 males versus 15 females. According to the histopathological examinations, 74 cases were papillary cell carcinomas. Concerning tumor grade, 70 tumors were classified as high grade and 30 tumors as low grade. Invasive carcinomas were detected in the other 88 cases; 60 (68.2%) stromal invasive cancers. Patients aged (55 – 64) years were with invasive bladder cancers, 69 (98.6%) of the bladder cancers that classified as high grade were invasive cancers. The proportion of high grade bladder cancer was significantly higher among the patients aged ≥ 75 years, and significantly higher among the patients who had squamous cell carcinoma.

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