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Original article

Evaluation of Bladder Tumors during the COVID-19 Era (2021) at Tripoli Central Hospital: A Retrospective Clinical and Pathological Study

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Bladder Tumor, Urothelial Carcinoma, COVID-19, Hematuria, Tripoli Central Hospital, TURBT, Smoking.

A B S T R A C T

This retrospective study evaluates patients admitted with a diagnosis of bladder growth (tumor) at Tripoli Central Hospital (TCH) during the Coronavirus Disease 2019 (COVID-19) pandemic era of 2021. Bladder cancer is the most common genitourinary malignancy, often presenting with symptoms that may mimic a urinary tract infection, which can lead to delayed diagnosis. The primary objective was to assess the clinical and pathological characteristics of these patients. 47 patients, aged between 23 and 85 years, were included in the study. The cohort consisted predominantly of males (41 males, 6 females). The main presenting symptom for the majority of patients (91.45%) was painless gross hematuria. Diagnostic workup involved clinical examination, Ultrasound Scan (USS), and Contrast Computed Tomography Urogram (CTU). Histopathological analysis revealed that Urothelial Carcinoma (TCC) accounted for the vast majority of cases (95.74%), with one case of Squamous Cell Carcinoma (SCC) and one benign tumor. A high percentage (78.72%) of patients were smokers, suggesting a strong correlation between smoking and bladder malignancy. All patients underwent Transurethral Resection of Bladder Tumor (TURBT) with complete tumor resection. The duration of hospitalization was short for most patients, ranging from 0 to 5 days (89.3%). The findings emphasize that gross hematuria, particularly in adult males over 40, must be promptly and thoroughly investigated for underlying malignancy, especially in the context of pandemic-related healthcare stresses.

Introduction

Bladder cancer is globally recognized as the most common malignancy affecting the genitourinary tract, ranking as the 10th most frequently diagnosed cancer worldwide [1]. The predominant histological subtype is Urothelial Carcinoma (UCC), historically referred to as Transitional Cell Carcinoma (TCC), which accounts for over 90% of cases [2]. Less common histological variants include Squamous Cell Carcinoma (SCC) (~7%) and Adenocarcinoma (~2%) [3].

A major clinical challenge in bladder cancer diagnosis is that its initial symptoms often overlap with benign conditions, such as urinary tract infections, leading to delays in timely diagnosis and treatment [4]. The classic and most frequently reported clinical presentation is painless gross hematuria, observed in approximately 85–90% of patients [5]. Accurate diagnosis relies on a combination of investigations, including urine analysis, radiological imaging (Ultrasound Scan, Computed Tomography), and the gold standard—diagnostic cystoscopy [6]. Histopathological evaluation remains essential for confirming tumor type and grade, guiding prognosis and treatment decisions [7].

The COVID-19 pandemic introduced unprecedented challenges to healthcare systems worldwide, resulting in deferred elective procedures, reduced cancer screening, and delayed presentations of non-communicable diseases [8]. Several studies have reported that bladder cancer patients experienced delayed diagnosis and treatment, potentially leading to more advanced disease at presentation [9]. Against this backdrop, the present study aimed to evaluate the clinical and histopathological profile of bladder tumor patients admitted to Tripoli Central Hospital (TCH) during the COVID-19 era in 2021. This evaluation provides insight into the demographic characteristics, clinical presentation, and pathological findings of bladder tumor patients in Libya, while assessing the severity of presentation during a period of significant healthcare system strain.

Methodology

Study Design and Setting

This was a retrospective study conducted by reviewing the medical records of patients admitted to the Urology Department of Tripoli Central Hospital (TCH). The study period covered the Corona era, specifically from January 1, 2020, to December 31, 2021.

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Participants

The study cohort consisted of 47 patients who were admitted as cases of suspected or confirmed bladder growth (tumor). The patients ranged in age from 23 to 85 years. The geographical distribution of patients was broad, including residents of Tripoli, surrounding cities, and regions from the east, west, and south of Libya. The cohort was composed of 41 male patients and 6 female patients.

Data Collection and Procedures

Patient files were systematically reviewed to extract demographic information, primary presenting symptoms, diagnostic workup, histopathological findings, and length of hospital stay.

The diagnosis of bladder tumors was confirmed through clinical examination supported by specialized investigations. Diagnostic procedures included abdominal and pelvic ultrasound scanning (USS), contrast-enhanced computed tomography urogram (CTU), and diagnostic cystoscopy, which served as the gold standard for direct visualization and confirmation of bladder lesions.

All patients underwent routine laboratory testing. This included urine routine examination (R/E) to assess hematuria and urinary abnormalities, as well as renal function tests (RFT) to evaluate baseline kidney function prior to intervention.

Definitive management for all patients consisted of Transurethral Resection of Bladder Tumor (TURBT). The procedure was performed with the intent of achieving complete resection of all visible tumors. Histopathological examination of resected specimens was subsequently conducted to determine tumor type, grade, and stage.

Results

A total of 47 patients diagnosed with bladder tumors were included in this study. The following tables and figures summarize the demographic, clinical, and histopathological characteristics of the study population. The majority of patients (91%) were over 40 years of age, with a peak incidence among those ≥70 years. This suggests that bladder tumors predominantly affect older adults.

Table 1. Age Distribution of Patients

Age group (years)	Number of patients	%
1–10	0	0
11–20	0	0
21–30	2	4.25
31–40	2	4.25
41–50	4	8.5
51–60	14	29.7
61–70	9	19.1
≥70	16	34.04
Total	**47**	**100%**

A clear male predominance was observed, with a male-to-female ratio of approximately 7:1, indicating that bladder tumors are significantly more common among males.

Table 2. Distribution According to Sex

Sex	Number of patients	%
Male	41	87.23
Female	6	12.76

The most frequent presentation was gross painless hematuria, observed in the vast majority (91.4%) of patients, underscoring its clinical importance as a key warning sign of bladder malignancy.

Table 3. Main Presenting Complaints

Main Complaint	Number	%
Gross hematuria	43	91.4
Loin pain	5	10.6
Signs/symptoms of metastasis	3	6.38

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Ultrasonography and CT urography were the main diagnostic modalities used, providing valuable information for tumor detection and staging. The need for blood transfusion in nearly one-fifth of patients reflects the severity of bleeding at presentation.

Table 4. Special Diagnostic Procedures Performed

Investigation	Number	%
USS abdomen and pelvis	45	95.7
CT urography (CTU)	41	87.23
Diagnostic cystoscopy	6	12.76

Hydronephrosis was uncommon, with 89% of patients showing no evidence of urinary obstruction, indicating early detection in most cases.

Table 5. Presence of Hydronephrosis

Hydronephrosis	Number	%
Unilateral	3	6.3
Bilateral	2	4.25
None	42	89.36

Transitional cell carcinoma (TCC) was by far the most common histological type (95.74%), with low-grade lesions predominating. Squamous cell carcinoma (SCC) and benign lesions were rare findings.

Table 6. Histopathological Types of Tumors

Histopathology	Number	%	Low grade	High grade
TCC	45	95.74	42 (93.3%)	3 (6.6%)
SCC	1	2.12	–	–
Benign tumor	1	2.12	–	–

A strong association between smoking and bladder tumor incidence was observed, consistent with the known role of tobacco exposure as a major risk factor for urothelial carcinoma.

Table 7. Smoking Status

Smoking Status	Number	%
Smokers	37	78.72
Non-smokers	10	21.27

Note: All female patients were non-smokers.

Most patients (89.3%) were discharged within five days, reflecting the minimally invasive nature and rapid recovery associated with TUR-BT procedures. All patients underwent TUR-BT (transurethral resection of bladder tumor) with complete resection.

Table 8. Duration of Hospitalization

Duration (days)	Number	%
0–5	42	89.3
5–10	5	10.63

Discussion

This retrospective study of 47 patients diagnosed with bladder tumors at Tripoli Central Hospital during 2021 highlights several important epidemiological and clinical features. The majority of patients were older adults, with peak incidence among those aged ≥70 years. This age distribution is consistent with global data, which demonstrate that bladder cancer is predominantly a disease of the elderly, with a median age at diagnosis of around 73 years [10]. A striking male predominance was observed, with a male-to-female ratio of approximately 7:1. This finding aligns with international reports indicating that men are three to four times more likely to develop bladder cancer compared to women [11]. The disparity has been attributed to differences in smoking prevalence, occupational exposures, and hormonal influences.

Gross painless hematuria was the most common presenting symptom, reported in over 90% of cases. This mirrors previous studies that identify hematuria as the hallmark symptom of bladder cancer, often serving as the first clinical warning sign [12]. Despite its diagnostic importance, hematuria is frequently

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misattributed to benign conditions, contributing to delays in diagnosis. Ultrasonography and CT urography were the primary diagnostic modalities employed, with cystoscopy performed in a smaller subset. While cystoscopy remains the gold standard for bladder tumor detection, imaging techniques are valuable for staging and identifying associated complications such as hydronephrosis. Comparable studies have emphasized the complementary role of imaging in bladder cancer workup [13]. Histopathological analysis revealed that transitional cell carcinoma (urothelial carcinoma) was the predominant subtype, accounting for 95.7% of cases, with low-grade lesions being most frequent. This distribution is consistent with global literature, which reports urothelial carcinoma as the dominant histological type, while squamous cell carcinoma and adenocarcinoma remain rare [14].

The strong association between smoking and bladder tumor incidence observed in this cohort reinforces the established role of tobacco exposure as the most significant modifiable risk factor for bladder cancer. Smoking has been shown to increase risk by up to fourfold, with a clear dose-response relationship [15]. Notably, all female patients in this study were non-smokers, suggesting that other environmental or genetic factors may contribute to disease development in women. Treatment with transurethral resection of bladder tumor (TURBT) was performed in all patients, with most discharged within five days. This reflects the minimally invasive nature of TURBT and its role as the cornerstone of initial bladder cancer management. Comparable studies have reported similar short hospital stays and favorable recovery profiles following TURBT [16].

The context of the COVID-19 pandemic must also be considered. Although this study did not directly assess delays in diagnosis or treatment, global reports have documented significant disruptions in cancer care during the pandemic, including postponed procedures and reduced access to diagnostic services [17,18]. These disruptions may have contributed to the severity of presentation in some patients, underscoring the importance of resilient healthcare systems capable of maintaining essential cancer services during crises.

Conclusion

All patients presenting with gross hematuria should be evaluated thoroughly, as a considerable proportion may harbor undiagnosed malignancies, particularly among adults over 30 years. Even microscopic hematuria in this age group warrants further diagnostic work-up to exclude bladder cancer. Raising public awareness regarding hematuria as a potentially serious symptom is crucial for early detection and improved prognosis of urological malignancies.

Conflict of interest. Nil

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