

Surgical therapeutic approaches to bladder cancer

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ABSTRACT

Bladder cancer is the uncontrolled proliferation of bladder cells, causing the formation of heterogeneous lesions. It is ranked second after prostate cancer in men and it is the first genitourinary tract cancer in women. The study aimed to study the epidemiological and therapeutic surgical approaches to bladder cancer. A descriptive study concerning patients suffering from bladder cancer, in the period from January 2018 to December 2022. We screened records and registers from surgery, oncology, operating theatre, pathology, and outpatient clinics at the different study sites for data on patients with bladder cancer. Data collection began with the identification of the search for the corresponding files. We recorded 101 bladder tumours, representing 16.1% of all tumour types. There was a male predominance with 64 cases. The mean age of 55.8 ± 18.8 years. About 65.3% of cases were smokers, 11.9% had a history of cancer, 54.5% were with comorbid histories, 6.9% were alcoholics, and 78.2% were educated. Furthermore, 10.9%, 15.8%, and 85.2% had history of schistosomiasis, cyst, and UTI respectively. Macroscopic hematuria was the most common reason for consultation with 77 cases (76.2%). Ninety-one cases had a history of surgery, 92 patients received RT and 100 patients received chemotherapy. The cystoscopy was carried out in 66 patients, urinary cytology was performed in 30 patients, IVU was made in 12 patients, a thoracoabdominal CT scan was done for 98 patients and 96 cases underwent Transurethral Resection of the Bladder (TURB). The most common histological type was TCC in 89 cases (88.1%). Thus, in total, conservative surgery was used in 101 patients, including TURB in 101 patients, partial cystectomy in 3 patients, and Ureterovesical reimplantation in 2 patients. In the radical surgery, 2 patients with vesiculocystoprostatectomy; 1 patient was treated by pelvectomy, and 1 had cystoprostatectomy. Urinary Diversion was performed in 4 patients. Surgery, chemotherapy coupled with radiotherapy plays an important role in the management of bladder cancer. TCC is the common histology type. Bladder cancer risk factors include old age smoking tobacco, recurrent UTI and schistosomiasis. Most of the patients present in advanced stages.

Key words: bladder cancer, TURB, schistosomiasis, cystectomy

INTRODUCTION

Bladder cancer ranks ninth in the world, with more than 450 thousand new cases [1, 2]. Multiple risk factors, the most common are smoking, occupational exposure, infections, and chronic irritation [3]. It is estimated that a bladder tumour is diagnosed in 2.7 million people every year worldwide [4]. The diagnosis of a bladder tumour will be evoked clinically in the presence of macroscopic hematuria or a bladder mass and the histology will confirm it [5]. Till now, depending on whether or not the muscular is invasive, the surgical management of bladder tumours ranges from simple resection to radical treatment [6]. Thus, bladder tumours that do not infiltrate the muscle are generally removed by transurethral resection and intra-vesical cytotoxic agent as BCG [7]. About 30% of cases with cancer infiltrating the muscle, manage by total cystectomy followed by urinary diversion or reconstruction. Chemotherapy is used also in cases of invasive cancer in combination with surgery, as a concomitant or concurrent with radiotherapy combined with surgery [8]. The epidemiological and histological aspects of bladder cancer have been the subject of numerous studies [9]. However, studies are scarce on the therapeutic aspect of bladder cancer. We have found it appropriate to devote scientific attention to this area.

METHODS

A descriptive study concerning patients suffering from bladder cancer, in the period from January 2018 to December 2022. We screened records and registers from surgery, oncology, operating theatre, pathology, and outpatient clinics at the different study sites for data on patients with bladder cancer. Data collection began with the identification of the search for the corresponding files. After finding the files, we proceeded to fill in the collection sheets from the files of the patients who met the inclusion criteria. The variables collected concerned socio-demographic, clinical, para-clinical and therapeutic data.

RESULTS

We recorded 101 bladder tumours, representing 16.1% of all tumour types. There was a male predominance with 64 cases and 37 females. The ages varied between 34 and 95 years with a mean age of 55.8 ± 18.8 years. About 31 cases lived in urban regions while 70 patients lived in rural areas.

About 65.3% of cases were smokers, 11.9% had a history of cancer, 54.5% were with comorbid histories, 6.9% were alcoholics, and 78.2% were educated. Furthermore, 10.9%, 15.8%, and 85.2%

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had history of schistosomiasis, cyst, and UTI respectively. Macroscopic haematuria was the most common reason for consultation with 77 cases (76.2%). Dysuria was presented in 51 patients (50.1%). Ninety-one cases had a history of surgery, 92 patients received RT and 100 patients received chemotherapy. Concerning bladder cancer grade, low-intermediate was found in 38.6% whereas high grade was recorded in 61.4%. Advanced stages were reported in 55.4% while early stages were reported in 44.6%. The cystoscopy was carried out in 66 patients, urinary cytology was performed in 30 patients, IVU was made in 12 patients, a thoracoabdominal CT scan was done for 98 patients and 96 cases underwent Transurethral Resection of the Bladder (TURB). The most common histological type was TCC in 89 cases (88.1%). SCC was found (11 cases; 10.9%) (Table 1).

Thus, in total, conservative surgery was used in 101 patients, including TURB in 101 patients, partial cystectomy in 3 patients,

and Ureterovesical reimplantation in 2 patients. In the radical surgery, 2 patients with vesiculocystoprostatectomy; 1 patient was treated by pelvectomy, and 1 had cystoprostatectomy. The urinary diversion was performed in 4 patients (Table 2).

DISCUSSION

Bladder cancer ranked second among urogenital malignancies beyond prostate cancer. This result is close to that of Ndamba et al. [10], Darré et al. [11], and Badiaga et al. [12], who found that the prevalence ranged from 14.1 to 16.3%. In Algeria, Salah et al. [13] and in Egypt, Amin et al. [14] found high prevalence rates of 60.3% and 75.0% respectively. This finding can be justified by a highly technical platform and cancer registries in these countries guaranteeing the quality of the data and better approaches for estimating the incidences and the different epidemiological parameters of bladder tumours. Moreover, WHO published

Tab. 1. Variables of the study

Variables		n	%
Age (years) mean±SD		55.8±18.8	
Sex	Male	64	63.4
	Female	37	36.6
Residency	Urban	31	30.7
	Rural	70	69.3
Smoking		66	65.3
Family		12	11.9
Comorbidity		55	54.5
Alcohol		7	6.9
Education		79	78.2
History of schistosomiasis		11	10.9
History of cyst		16	15.8
History of UTI		86	85.2
History of surgery		91	90.1
Radiotherapy		92	91.1
Chemotherapy		100	99
Histopathology	TCC	89	88.1
	SCC	11	10.9
	Other	1	1
Grade	Low-intermediate	39	38.6
	High	62	61.4
Stage	I-II	45	44.6
	III-IV	56	55.4
Hematuria		77	76.2
Dysuria		51	50.1
Transurethral resection of the bladder (TURB)		96	95.1
Cystoscopy		66	65.3
Urinary cytology		30	29.7
IVU		12	11.9
Thoraco-abdominal CT scan		98	97.1

Tab. 2. Surgical approaches

Approaches	n	P value
Conservative surgery		
TURB	96	0.001
Partial cystectomy	3	
UV reimplantation	2	
Radical surgery ± lymph node dissection		
Vesiculocystoprostatectomy	2	0.06
Cystoprostatectomy	1	
Anterior pelvectomy	1	
Urinary diversion and replacement		
Hautman enterocystoplasty	1	0.07
Studer enterocystoplasty	1	
External: trans-intestinal ureterostomy	1	
Internal: Sigmoid ureterostomy Neobladder	1	

in 2015, that urinary schistosomiasis is an endemic parasitism in more than 78 countries in the world (42 African countries) [15]. This higher rate in North Africa, particularly in Egypt is connected to the proximity to the Nile River, where *Schistosoma haematobium* infection is very endemic [16].

In our population, there was a male predominance with 64 cases and 37 females. This observation is made in many kinds of literature, such as by Saurabh et al. [17], Hebat et al. [16], and Touré [18]. This could be explained by the more frequent exposure of men to the risk factors.

The ages varied between 34 and 95 years with a mean of 55.8 ± 18.8 years. Most cases lived in rural areas. This result is higher than those found by Amiroune et al. [19]. This could be justified by the early infestation of *Schistosoma haematobium* in children and adolescents during swimming, which will be responsible for the development of neoplasia of the bladder [14]. Authors incriminate a hereditary predisposition in the bladder tumours occurrence in the young group, in particular genetic mutations on chromosomes 7 and 17 [20, 21]. On the other hand, in the series of Engbang et al. [22], Traore et al. [23] and Lebret et al. [24], and Roupert et al. [25], the average age is 50 years to 65 years. Bladder tumours can indeed occur at a young age, but more than 90% of new cases appear in the elderly [25]. Indeed, aging promotes carcinogenesis by potential genetic abnormalities and by reducing the performance of the immune system that can destroy cancer cells [25], these explain the high frequency of bladder tumours in the elderly.

In this study, about 65.3% of cases were smokers, 11.9% had a history of cancer, 54.5% were with comorbid histories, 6.9% were alcoholics, and 78.2% were educated. Smoking is the most common risk factor encountered worldwide and is attributed to more than 50% of the occurrence of cancer [22, 26, 27]. Thus, the risk of developing bladder cancer is 4 times higher in smokers compared to non-smokers [28]. Comorbid conditions were not of value as risk factors. This could be explained by the fact that bladder cancer would have more of an origin linked to environmental factors than to genetics.

Furthermore, 10.9%, 15.8%, and 85.2% had history of schistosomiasis, cyst, and UTI respectively. The countries with high endemicity of urinary schistosomiasis, like Mali (73.5% of BC) and Senegal (63.0% of BC), the *Schistosoma haematobium* infection is the first incriminated in the occurrence of [18, 23]. Indeed, the chronic presence of the eggs of this parasite in the bladder environment leads to a significant granulomatous reaction responsible for intra-vesical ulcerative injuries, polyploid growths, and fibrosis which lead to bladder dysfunction [29, 30].

Macroscopic hematuria was the most common reason for consultation with 77 cases (76.2%). Dysuria was presented in 51 patients (50.1%). Gross hematuria was the most common symptom. That of most published series, including those of Messing et al. [31], Niang et al. [32] and Boureima et al. [26]. European studies showed the same findings, often terminal, which is the most frequent clinical sign associated with signs of bladder

irritation in the absence of urinary infection [33, 34]. However, Cherif et al, reported signs of irritation as the most frequent reason for consultation with voiding disorders in 94.5% and hematuria was in second place in 88% [35].

About bladder cancer grade, low-intermediate was found in 38.6% whereas high grade was recorded in 61.4%. Advanced stages were reported in 55.4% while early stages were reported in 44.6%. The cystoscopy was carried out in 66 patients, urinary cytology was performed in 30 patients, IVU was made in 12 patients, a thoracoabdominal CT scan was done for 98 patients and 96 cases underwent transurethral resection of the bladder (TURB). The most common histological type was TCC in 89 cases (88.1%). SCC was found (11 cases; 10.9%). Touré found the same result in Mali in 2020 [18]. Most African and European series [24, 26] found that the most histology was TCC. This result is different from those found in Senegal by Traoré et al. in 2018 and Touré in Mali where the predominance of SCC [18, 23]. This could be explained by the greater exposure to smoking, favoring the type of TCC. Moreover, TCC with SCC differentiation has not been found in any other literature. In the series by Traoré et al. in 2018, cystoscopy was the key diagnostic examination [23]. These results are in agreement with some authors in the literature who claim that advanced diseases are frequent in bladder cancer [22, 25].

Thus, in total, conservative surgery was used in 101 patients, including TURB in 101 patients, partial cystectomy in 3 patients, and Ureterovesical reimplantation in 2 patients. In the radical surgery, 2 patients with vesiculocystoprostatectomy; 1 patient was treated by pelvectomy, and 1 had cystoprostatectomy. The urinary diversion was performed in 4 patients. This result differs from the series of Saadoun in 2019, and Mohammed in 2018 in Morocco where respectively 57% and 42.8% of patients benefited from BCG immunotherapy after transurethral resection [31, 32]. This divergence of practice would be justified by the unavailability of the attenuated form of BCG for installations. However, the use of mitomycin C for instillations is not always within reach of patients. Patients had undergone partial or total cystectomy associated with general chemotherapy if they were in stages III-IV [33]. This practice is in full agreement with the recommendations of the Cancerology Committee of the French Association of Urology and the Association of Canadian Urologists [25, 34]. Hajjoubi in Morocco in 2010 [35] used these techniques in his series. However, it was noted that 4.1% of patients chose to abstain from surgery either for impaired general condition and advanced tumour stage or for lack of financial means.

CONCLUSION

Surgery, chemotherapy coupled with radiotherapy plays an important role in the management of bladder cancer. TCC is the common histology type. Bladder cancer risk factors include old age smoking tobacco, recurrent UTI and schistosomiasis. Most patients present in advanced stages.

COMPETING INTERESTS

None.

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