

# Epidemiological, Clinical and Therapeutic Aspects of Bladder Tumors in a Schistosomiasis-Endemic Country

Amadou Kassogue<sup>1\*</sup>, Idrissa Sissoko<sup>1</sup>, Alkadri Diarra<sup>2</sup>, Moussa Salifou Diallo<sup>1</sup>, Daouda Sangare<sup>1</sup>, Boureima Coulibaly<sup>1</sup>, Philippe Togo<sup>1</sup>, Albacaye Sember<sup>1</sup>, Mahamadou Traore<sup>1</sup>, Salia Coulibaly<sup>3</sup>, Mamadou Lamine Diakite<sup>4</sup>

<sup>1</sup>Urology Department, Pr Bocar Sidy Sall University Hospital, Kati, Mali

<sup>2</sup>Urology Department, Luxembourg University Hospital, Bamako, Mali

<sup>3</sup>Medical Imaging Department, Pr Bocar Sidy Sall University Hospital, Kati, Mali

<sup>4</sup>Urology Department, Point G University Hospital, Bamako, Mali

Email: \*kassogueamadou@hotmail.fr

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## Abstract

**Introduction:** Bladder tumors are common in our country; Mali is a bilharzial endemic country. In our context, urinary bilharzia is common, and bladder tumors arouse particular interest in the field of urological oncology, because of their frequency, their diagnosis, their difficulty in management and their histological particularity. The objective of our work was to study the epidemiological, clinical and therapeutic aspects of bladder tumors. **Materials and Methods:** This is a cross-sectional, descriptive study with a retrospective and prospective collection that took place over 3 years from January 1, 2020 to December 31, 2022. **Results:** We identified 316 cases of bladder tumors during this period. Bladder tumors are a common pathology representing 35.95% of all hospitalized patients, and occupying the 1st rank of tumors in urology in the Urology Department of the Pr Bocar Sidy Sall University Hospital in Kati. Bladder tumors were more common in men with 56.33%. The average age of our patients was 50 years  $\pm$  25.8 years and the extreme ages were 20 and 87 years. Urinary schistosomiasis, considered a predisposing factor, was found in 66.78% of cases in our patients as a history. Transurethral resection of the bladder was performed in 100% of our patients, nephrostomy in 1.90% of cases, ureterostomy in 1.58% of cases, Bricker type urinary diversion in 1.27% of cases, and a neobladder in 0.32% of cases. Squamous cell carcinoma is the dominant histological type (88.29%). The postoperative outcome was 99% favorable after resection. **Conclusion:** Bladder tumors were mainly tumors infiltrating the bladder muscle. The main risk factor was urinary bil-

harzia. Squamous cell carcinoma is the most common histological type with a diagnostic delay, thus limiting radical treatment after resection of the bladder tumor.

## Keywords

TURB, Squamous Cell Carcinoma, Urinary Schistosomiasis

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## 1. Introduction

Bladder tumors are tumors that develop in the bladder. Malignant bladder tumors are cancers and they are divided into two subgroups: bladder tumors not infiltrating the muscle (NMIBC), which pose two major problems: the risk of recurrence and the risk of progression to a stage or a higher grade. Muscle-infiltrating bladder tumors (MIBC) with a high risk of metastasis and death, which justifies radical treatment. Worldwide, bladder tumors are diagnosed in more than 2.7 million people each year [1] [2].

Multiple risk factors are incriminated. The most important are tobacco, chronic bladder infections and irritations, occupational exposure to dyes and chemical substances, and urinary bilharzia.

Urothelial carcinoma is the most common histological type accounting for more than 80% of bladder cancers worldwide [2]. On the other hand, in schistosomiasis-endemic countries in the Middle East and West Africa, squamous cell carcinoma is the most common histological type [3] [4] [5] [6]. In our context, a resource-limited country developing, bladder tumors arouse particular interest in the field of urological oncology, due to their frequency, their anatomic-pathological polymorphism, their diagnostic delay, and their difficulty in management. The diagnosis of a bladder tumor has become easy thanks to modern means of exploration (cystoscopy, bladder fibroscopy, etc.) but poses problems of therapeutic management and prognosis, especially for infiltrative forms [7]. The objective of our work is to study the epidemiological, clinical and therapeutic aspects of bladder tumors in a schistosomiasis-endemic country, such as Mali.

## 2. Materials and Methods

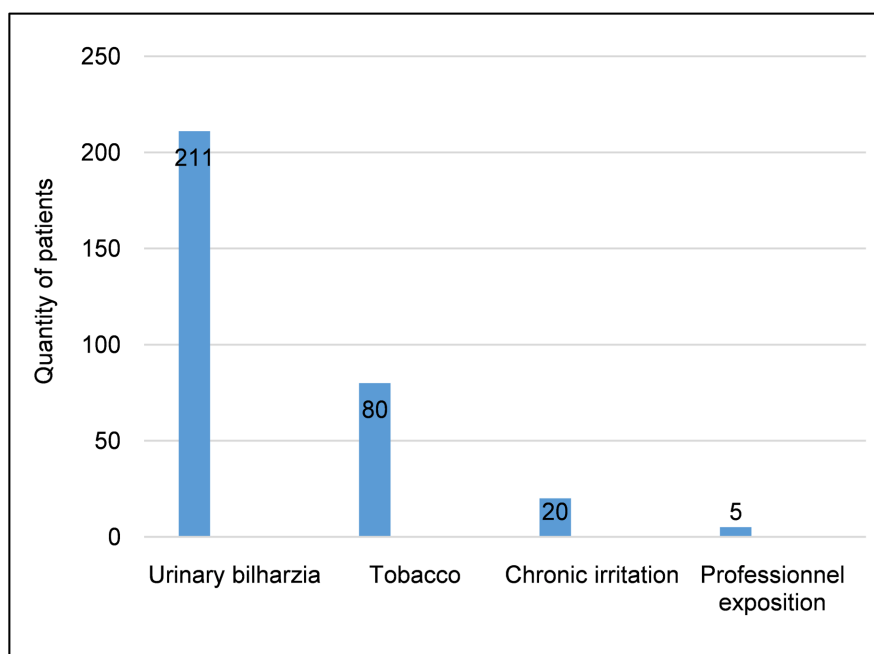
This is a cross-sectional, descriptive study with a retrospective and prospective collection which took place over 3 years from January 1, 2020 to December 31, 2022.

Any case of bladder tumor operated on in the department and having been confirmed by additional examinations (ultrasound, cystoscopy, URO CT, histology) was included. The questionnaire developed included sociodemographic data, clinical data; additional examinations; expansion reports; the treatment containing an operative report and the report of the anatomic-pathological examination. Data were collected from hospitalized patient registers and hospitalized pa-

tient files; registers of operating reports; reports of anatomic-pathological examinations. Included in our study was any case of bladder tumor hospitalized and operated on in the department and having been confirmed by additional examinations in particular ultrasound, cystoscopy, URO CT, and histological examination after transurethral resection of the bladder tumor. We entered and analyzed the text using the software (Word 2016 and SPSS).

### 3. Results

We recorded 316 cases of bladder tumors during this period. They represented 35.95% of all hospitalized patients, and occupied the 1st rank of tumors in urology in the urology department of the Professor Bocar Sidy Sall University Hospital in Kati. Bladder tumor was more common in men with 56.33%. The average age of our patients was 50 years  $\pm$  25.8 years with extreme ages of 20 and 87 years (Table 1). Urinary schistosomiasis was the main risk factor, *i.e.* 66.78% (Figure 1). The majority of our patients presented hematuria, *i.e.* 93.35% (Table 2). Cystoscopy revealed a budding appearance in 92.09% of our patients (Table 3). The bladder dome was the most represented tumor location with a percentage of 36.71% (Table 4). Stage T3 represented 56.17%; 57.14% of patients had lymph node involvement and 69.81% of patients had metastases (Table 5). Transurethral resection of the bladder (TURB) was incomplete in 97.47% of cases (Table 6). Squamous cell carcinoma was the most common histological type, *i.e.* 88.29% (Table 7). A radical cystectomy was performed in 10 patients, *i.e.* 3.16% (Figure 2). Nephrostomy was the most common type of diversion performed, *i.e.* 1.90%.



**Figure 1.** Distribution of patients according to risk factors. Urinary schistosomiasis was the most represented factor, *i.e.* 66.78%.

**Table 1.** Distribution of patients according to sociodemographic characteristics.

Features		Number	Percentage (%)	
Sociodemographic	Numbers			
<b>Sex</b>	<b>Male</b>	<b>178</b>	<b>56.33</b>	
	Female	138	43.67	
<b>Age</b>	Less than 20 years	7	2.22	
	20 - 40 years	62	19.62	
	40 - 60 years	83	26.27	
	<b>60 - 80 years</b>	<b>154</b>	<b>48.73</b>	
	80 and years	10	3.16	
<b>Profession</b>	Others	4	1.27	
	Civil servant	37	11.71	
	Trader	27	8.54	
	Housewife	113	35.76	
	Worker	9	2.85	
	<b>Cultivator</b>	<b>126</b>	<b>39.87</b>	
<b>Educational level</b>	<b>None</b>	<b>120</b>	<b>37.97</b>	
	Primary	110	34.81	
	Secondary	70	22.15	
	Superior	16	5.06	
<b>Residence</b>	<b>Rural</b>	<b>120</b>	<b>37.97</b>	
	Peri-urban	115	36.39	
	Urban	81	25.63	

The bladder tumor was found in men in 56.33% of cases. The age group of 60 - 80 years was the most represented. Farmers and housewives were the most common professions with 39.87% and 35.76% respectively. About 37.97% of the patients are uneducated and 37.97% came from the rural area.

**Table 2.** Functional signs.

Functional Signs	Number		Percentage (%)	
	Yes	No	Yes	No
<b>Urination Disorders</b>				
Hematuria	295	21	93.35%	6.65
Hypogastric pain	122	194	38.61%	61.39
Lombalgia	140	176	44.30%	55.70
Urination disorders	256	60	81.01%	18.99

The majority of our patients, *i.e.* 93.35%, presented hematuria.

**Table 3.** Cystoscopic aspects.

Aspect Cystoscopique	Number	Percentage (%)
<b>Budding</b>	<b>291</b>	<b>92.09</b>
Not achieved	13	4.11
Papillary	6	0.90
Sessile	4	1.27
Vegetative	2	0.63
<b>Total</b>	<b>316</b>	<b>100</b>

Cystoscopy revealed a budding appearance in 92.09% of our patients.

**Table 4.** Distribution of patients according to the location of the tumor.

Tumor location	Number	Percentage (%)
<b>Bladder dome</b>	<b>116</b>	<b>36.71</b>
Trigone	96	30.38
Right side wall	51	16.14
Left side wall	31	9.81
Right side wall plus dome	11	3.48
Trigone and left side wall	5	1.58
Bladder dome and trigone	3	0.95
Dome and right anterolateral wall	2	0.64
Dome and left anterolateral wall	1	0.32
<b>Total</b>	<b>316</b>	<b>100</b>

The bladder dome was the most represented tumor location with a percentage of 36.71%.

**Table 5.** Distribution of patients according to the 2016 TNM classification.

TNM	Number	Percentage (%)
T1	4	1.30
T2	70	22.73
T3	173	56.17
T4	61	19.81
Nodes		
N0	40	12.99
Nx	176	57.14
N1-N2	92	29.87
Metastases		
M0	215	69.81
M1	93	30.19

Stage T3 presented 56.17% of our patients; 57.14% of patients presented lymph node involvement and 69.81% of patients presented metastases.

**Table 6.** Distribution of patients according to the result of TURB.

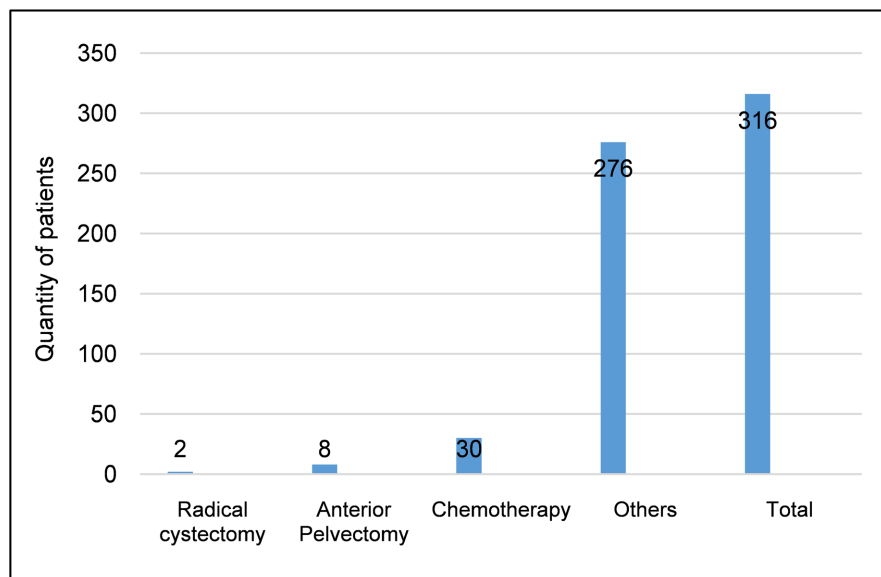
TURB	Number	Percentage (%)
Incomplete	308	97.47
Complete	8	2.53
<b>Total</b>	<b>316</b>	<b>100</b>

Incomplete TURB was the most presented with 97.47%.

**Table 7.** Distribution of patients according to histological type.

Histological Type	Number	Percentage (%)
Squamous cell carcinoma	279	88.29
Urothelial carcinoma	27	8.54
Bilharzial granuloma	7	2.85
Inflammatory granuloma	2	0.32
Adénocarcinoma	1	0.32
<b>Total</b>	<b>316</b>	<b>100</b>

Squamous cell carcinoma was the most represented histological type with 88.29% of our patients, others represented 7 cases of bilharzial granuloma and 2 cases of inflammatory granuloma.

**Figure 2.** Distribution of patients according to therapeutic aspects. Radical surgery (total cystoprostatectomy, anterior pelvectomy) was performed in 10 patients or 3.16%.

#### 4. Discussion

Worldwide, bladder tumors are diagnosed in more than 2.7 million people each year [2]. Bladder cancer represents the second most common urological cancer af-

ter prostate cancer and is the 10th most common cancer [8]. In 3 years, we identified 308 cases of bladder cancer out of 316 of bladder tumors, the 8 cases were benign tumors, *i.e.* a hospital frequency of 35.95%.

The incidence and mortality rates are respectively 9.6% and 3.2% per 100,000 men, and the male/female sex ratio is estimated at 4/1. Globally, in 2018, 549,000 new cases of bladder cancer were diagnosed with 200,000 cases of death. The highest incidence rates are found in Europe, North America and North Africa [9] [10]. According to a meta-analysis of bladder cancer in Africa, the cumulative incidence is 7.0 per 100,000 in men and 1.8 per 100,000 in women [11].

Niang *et al.* in Dakar [6] collected 223 cases of bladder tumors over a period of 3 years from January 2009 to November 2012. This could be explained by the high frequency of bladder tumors in the population, in particularly in rice-growing areas with a high incidence of bilharzia which is an important risk factor. Bladder tumor was more common in men in 56.33% of cases and the age group of 60 - 80 years was the most represented.

Kamaté *et al.* [4] in Mali in 2012, found an average age of 52.32 years with extremes of 3 years and 81 years. On the other hand, Paneau *et al.* [1] found slightly higher figures with an average age of 69 years for men and 71 years for women. This study carried out in the West shows an older age of patients than in Africa. This could be explained by the type of carcinoma and the risk factors in the West which are different from those found in West Africa. Farmers and housewives were the most common professions with 39.87% and 35.76% respectively. These patients live in rural areas, in contact with water for rice growing, market gardening, fish farming and suffer from urinary bilharzia which constitutes the main risk factor in our context.

In this study, the functional signs were marked by hematuria, *i.e.* 93.35% associated or not with symptoms of the lower urinary tract. Likewise, in the study by Kane *et al.* [12], the reasons for referral were: hematurie in 60.82% of cases, a pelvic mass in 19.2% of cases, and an irritative urinary symptom (6.19%). At cystoscopy, the most frequent location was the dome and the trigone respectively 36.71% and 25.32%. The study by Traoré *et al.* [13] in Senegal found 14.28% at the level of the dome and the trigon.

Squamous cell carcinoma was the most represented histological type with 88.29%. Much higher than that of Descazeaud *et al.* [8], who had 50.07% of squamous cell carcinoma and Diarra *et al.* or 52.94% [14]. Gaye *et al.* [15] report that bladder bilharzioma poses the problem of differential diagnosis with squamous cell carcinoma and bladder stones in bilharzial endemic areas. We found 7 cases of bilharzial granuloma in our study.

TURB was incomplete in 97.47% given the volume of the tumor. This resection was complete and deep in 47.1% of patients in the study by Diarra *et al.* [14]. Radical surgery (total cystoprostatectomy, anterior pelvicotomy) was performed in 10 patients with a percentage of 3.16%. It is recommended to perform endovesical instillation of first-line chemotherapy or BCG therapy as an alterna-

tive, in cases of intermediate-risk NMIBC, or high-risk BCG therapy [2]. In our study, we were not able to carry out any cases of endovesical instillation of chemotherapy or BCG therapy.

Cystectomy, preceded by neoadjuvant chemotherapy based on cisplatin, which is a standard curative treatment, is recommended for localized MIBC [16]. In our context, 57.14% of patients presented with lymph node involvement and 69.81% of patients presented with distant metastases, those which limited radical surgery.

The diagnosis of the bladder tumor is late in our context, the hematuria being painless and intermittent, the patient initially minimizes this hematuria and considers it as urinary bilharzia. This leads to a diagnostic delay with an advanced-stage tumor. Care is delicate and monitoring is difficult. The prognosis of patients is poor, with the majority of patients not being medically insured. The limitation of our study is that this work was carried out in a single urology center with a large endourology activity in a schistosomiasis-endemic country. A multicenter study would provide a better assessment on a national level. The study carried out by Kamaté *et al.* [4] on bladder cancers, covered the country's national registry.

## 5. Conclusion

Bladder tumors were mainly tumors infiltrating the bladder muscle. The main risk factor was urinary bilharzia. Squamous cell carcinoma is the most common histological type with a diagnostic delay, thus limiting radical treatment after resection of the bladder tumor.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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