

Management of Bladder Tumors: What Results in 10 Years of Practice at the University Clinic of Urology-Andrology of the CNHU-HKM of Cotonou?

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Abstract

Introduction: Bladder tumors are the 2nd largest urological cancer with an increasing incidence of about 1% per year. The aim of our study was to determine the prevalence of bladder tumors at the University Clinic of Urology-Andrology of the National University Hospital Center Hubert Koutoukou Maga of Cotonou, to describe the diagnostic aspects, and to evaluate the therapeutic modalities used. **Patients and Methods:** This was a descriptive, retrospective, and analytical study with a cross-sectional data collection, listing 68 cases of bladder tumors over a 10-year period from January 2013 to December 2022. **Results:** Men predominated (67.65%) with a sex ratio of 2.09. The mean age of patients was 57.22 ± 13.79 years, with extremes of 16 years and 89 years. The age group of 60 to 69 years was the most represented and made up 29.41% of patients. Hematuria was the main reason for consultation (45.59%). History was dominated by smoking (17.65%) and urinary schistosomiasis (14.71%). One of the patients was exposed to occupational carcinogens. The clinical picture was dominated by conjunctival pallor (47.1%) and deterioration in general condition (42.65%). Para clinically, pelvic ultrasound was performed by 88.24% of patients with a sensitivity of 77.84%. Cystoscopy performed by 36 patients (52.94%) confirmed the lesion in 97.22% of cases. The tumors were budding (88.57%), sessile (97.14%) and multifocal (20%). The non-muscle in-

filtrating bladder tumor accounted for 51.47% of cases. Histopathological examination was performed in 22 patients (32.35%) with a predominance of urothelial carcinoma. Forty patients (58.82%) had received treatment, including 38 surgeries and 2 endovesical instillations. A total of 61.76% of patients were lost to follow-up, 8.82% had progression-free follow-up, 2.94% had tumor regrowth, and 26.47% died. **Conclusion:** Bladder tumours remain a public health problem. Diagnosis is clinical and, above all, paraclinical. The best treatment is to prevent risk factors.

Keywords

Tumors, Bladder, Hematuria, Schistosomiasis, Benin

1. Introduction

Causing nearly 10 million deaths in 2020, cancer is one of the leading causes of death worldwide. Bladder tumors (BT) occupy the 4th place in incidence and the 7th place in deaths from all cancers combined and constitute the second urological cancer after the prostate cancer [1] [2]. Their incidence is increasing by around 1% per year, with greater growth in women than in men. They constitute a group of tumors which, due to their variable size and aggressiveness, remain one of the major concerns of urologists throughout the world despite the considerable advances made in the medical field [3]. Prevention of BT is based on the active fight against its main risk factor, tobacco intoxication [4]-[6]. Urogenital bilharziasis constitute an important infectious factor in our context [7]-[14].

Treatment of these tumors at an early stage involves local resection with preservation of the bladder [15]. Diffuse tumors can be treated with local chemotherapy; more extensive tumors may require radical surgery with removal of the bladder and in men, excision of the prostate and in women, excision of the uterus [16]-[18].

In our context, cases are often seen at an advanced stage and the oncological outcome of these tumors is not promising; These are the most aggressive tumors leaving only palliative alternatives choices.

This work aims to study the diagnostic and therapeutic aspects of bladder cancer over 10 years of treatment at the HKM National University Hospital Center (CNHU-HKM) in Cotonou.

2. Objectives

The general objective of this work was to study the management of bladder cancer at the CNHU-HKM in Cotonou. More specifically, the aim was to describe the epidemiological, diagnostic and therapeutic aspects of bladder cancer at the CNHU HKM in Cotonou from January 2013 to December 2022.

3. Patients and Methods

This was a descriptive and retrospective study with a cross-sectional data collection, listing 68 cases of bladder tumors over a 10-years period from January 2013 to December 2022. The study was carried out at the HKM National University Hospital Center in Cotonou, specifically at the University Clinic of Urology-Andrology (CUUA).

The study included all cases of bladder tumors operated or hospitalized at the CUUA and confirmed, with complete medical records. We excluded all cases of secondary invasion of the bladder by a neighboring cancer (rectum, prostate, cervix, etc.) and records not found or incomplete.

The parameters studied were epidemiological, diagnostic and therapeutic parameters.

After checking that the survey forms were completed, data cleaning and analysis were carried out using the statistical software “Epi info7”. The tables and graphics were created in Microsoft software “Excel 2021” and “Word 2021”. A descriptive analysis of the variables is carried out. For qualitative variables, frequencies and proportions were determined.

Ethically, permission was obtained from the department head and the hospital director in advance. Data collection was carried out anonymously using identification numbers.

4. Results

Epidemiological aspects:

Annual frequency: The annual frequency of bladder tumors is very variable but has an increasing trend (Figure 1).

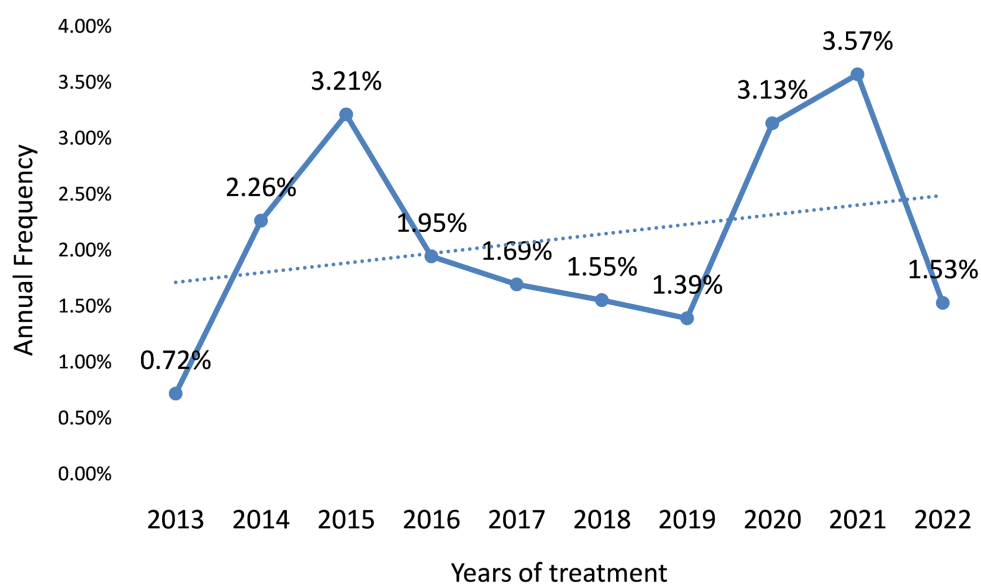


Figure 1. Annual frequency of bladder tumors at the University Clinic of Urology Andrology of the National University Hospital Center HKM of Cotonou from 2013 to 2022.

Age and sex: The male sex predominated (67.65%) with a sex ratio of 2.09 and the average age of our patients was 57.22 years \pm 13.79 with extremes of 16 years to 89 years old. There was no significant difference between the mean age of men and women, respectively 56.56 years \pm 15.29 and 58.59 \pm 10.15 ($p = 0.71$) (**Figure 2**).

Occupation: Liberal workers and traders were the most represented with 45.59% and 19.12% of patients respectively (**Table 1**).

Religious beliefs of patients: Christianity was the most represented religion and made up 63.24% of patients (**Table 2**).

Marital status of patients: In our sample, 51 (75.00%) patients were married (**Figure 3**).

Level of patients' education: The majority of our patients (63.23%) had reached at least secondary school (**Table 3**).

Nationality and ethnicity: The majority of our patients were beninese (91.18%). The Fon and Goun ethnic groups were the most represented with 28 (41.17%) and 10 (14.70%) respectively (**Figure 4**).

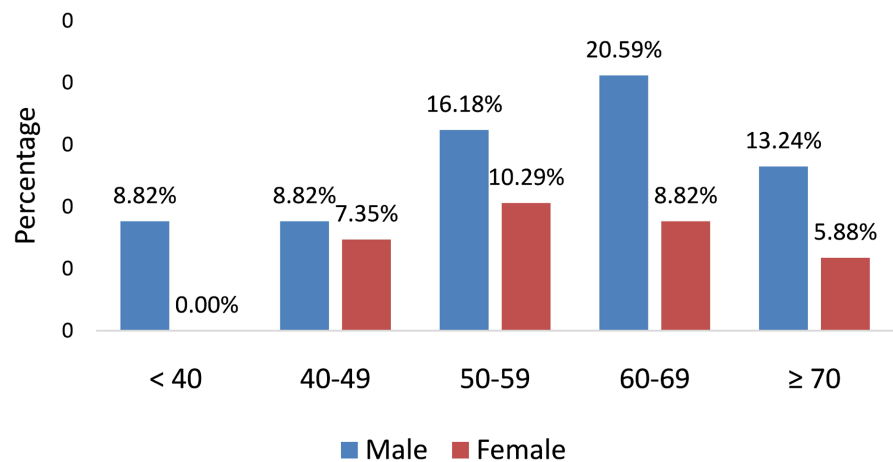


Figure 2. Distribution of patients according to sex and age group.

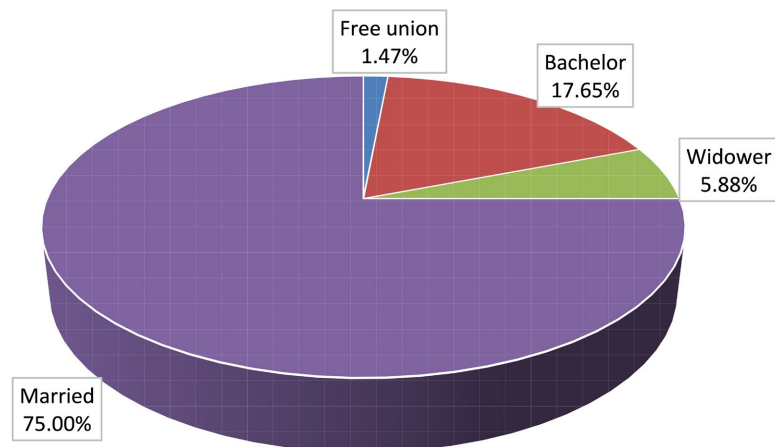


Figure 3. Marital status of patients.

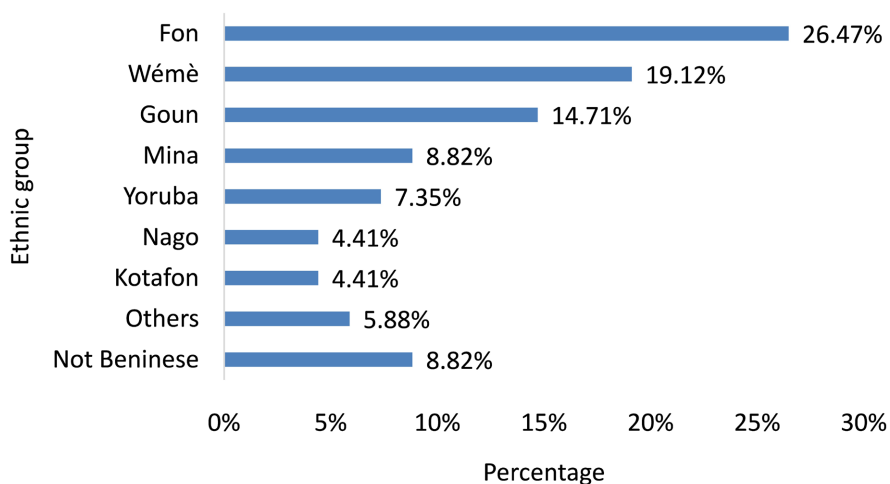


Figure 4. Distribution of patients according to ethnicity.

Table 1. Distribution of patients according to profession.

	Frequency (n)	Percentage (%)
Liberal	31	45.59
Official	9	13.24
Trader	13	19.12
Private company agent	4	05.88
Pupil/Student	1	01.47
Retirement	10	14.71
Total	68	100

Table 2. Distribution of patients according to religion.

	Frequency (n)	Percentage (%)
Christianity	43	63.24
Islam	18	26.47
Atheism	4	05.88
Animism	3	04.41
Total	68	100

Table 3. Distribution of patients according to level of education.

	Frequency (n)	Percentage (%)
Uneducated	10	14.71
Primary	15	22.06
Secondary	27	39.71
University	16	23.53
Total	68	100

Clinical aspects of bladder tumors:

Patient entry mode: We note a predominance of patients admitted on referral from another center representing 51.47% of cases (**Table 4**).

Reason for consultation: The most frequent reason for consultation (86.76%) was hematuria which was immediately total in 45.59% of cases (**Table 5**).

History of cancer risk: **Figure 5** presents the distribution of patients according to cancer risk history. In the sample studied, 10 patients had a history of diagnosed urinary bilharzia and among them, only 4 had received adequate treatment. However, a stay in a bilharzia endemic area was reported in 4 other patients (5.88%) and a notion of swimming in risky water in childhood was revealed in 11 other patients (16.18%). In the sample studied, 12 (17.65%) patients reported regular consumption of tobacco or alcohol and among them, 4 (5.88%) patients were both tobacco and alcohol drinkers. Only one patient was recognized as exposed to occupational carcinogens, particularly hydrocarbons. For the others, possible exposure has not been documented. We note the presence of high blood pressure and diabetes in the medical history of patients with respectively 36.76% and 16.18% of cases.

Physical signs: **Figure 6** shows the distribution of patients according to physical signs. We note a predominance of conjunctival pallor and deterioration of general condition with respectively 47.06% and 42.65%.

Paraclinical aspects:

Figure 7 presents the rate of completion of diagnostic imaging examinations for bladder tumors.

Ultrasound: In our sample, 60 (88.24%) patients had performed pelvic ultrasound and the results confirmed the existence of a tumor in 53 patients (88.33%). The lesions observed were mainly wall thickening (77.36%) and uretero-hydronephrosis (45.28%) (**Table 6**). On ultrasound, the tumors observed were essentially diffuse (39.62%) or localized on the posterior wall of the bladder (37.74%) as shown in the **Figure 8**. A prostate tumor was found on ultrasound in 7 patients (13.20%) and bladder lithiasis in one (3.77%).

Cystoscopy: In the sample, 36 (52.94%) patients had performed a cystoscopy and the tumor had been confirmed in 35 cases (97.22%). The tumor lesions visualized were mainly located on the left lateral (51.42%) and posterior (37.14%) surfaces of the bladder. The tumors were essentially budding (88.57%) and the base of implantation of the majority (97.14%) was sessile. Furthermore, bladder capacity was reduced in 6 patients (17.14%). The other lesions visualized at cystoscopy were bladder lithiasis (1/35), urethral stricture and suspected bilharziasis (1/35) (**Table 7**).

Urological Computed tomography (Uro-CT): Exactly 22 (32.35%) patients had performed Uro-CT and the tumor was visualized in 19 cases. The location on the posterior surfaces of the bladder was most frequently (36.84%) found followed by the left lateral surfaces (31.58%) (**Table 8**). **Figure 9** shows the character of the tumor on uroscan. Budding tumors are the most found on uroscanner with 84.21%.

In addition to the parietal thickening (52.63%), the lesions observed were mainly the impact on the upper urinary tract (47.37%) and the loco-regional extension (15.79%) (**Table 9**).

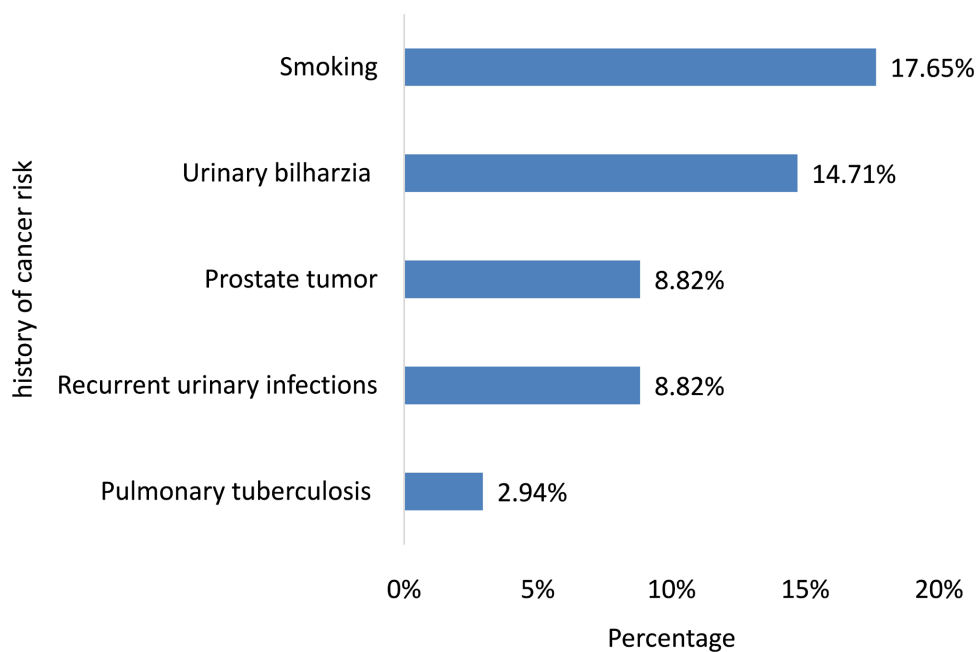


Figure 5. Distribution of patients according to cancer risk history.

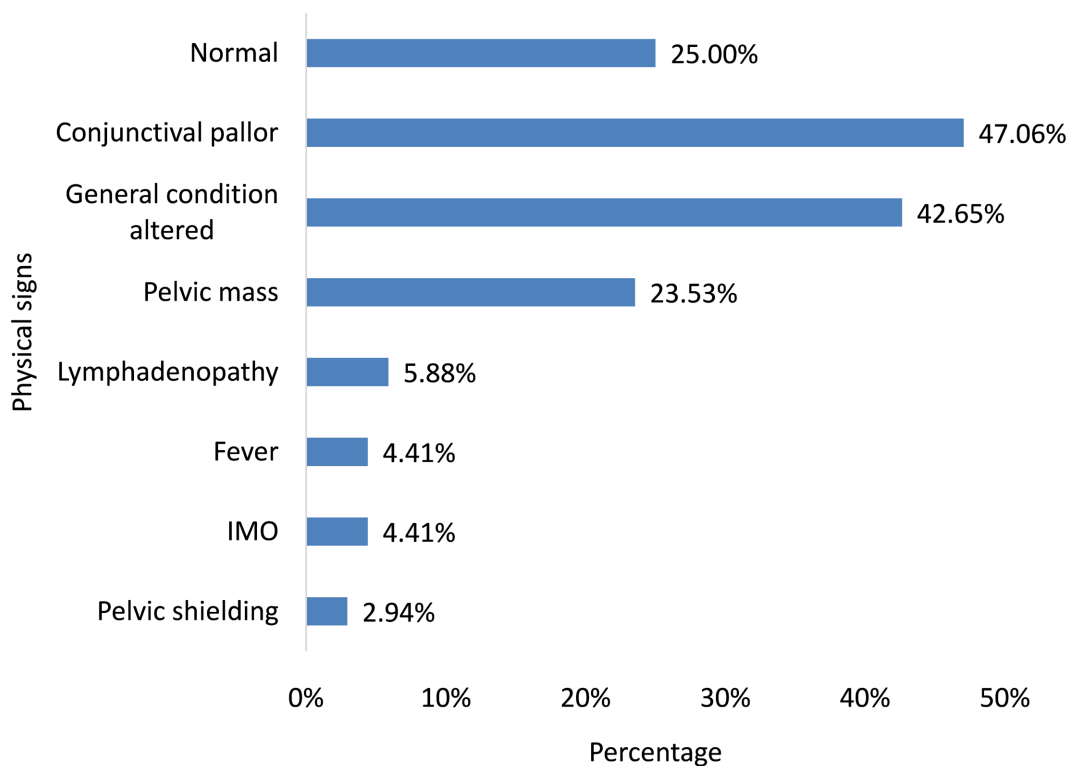


Figure 6. Distribution of patients according to physical signs.

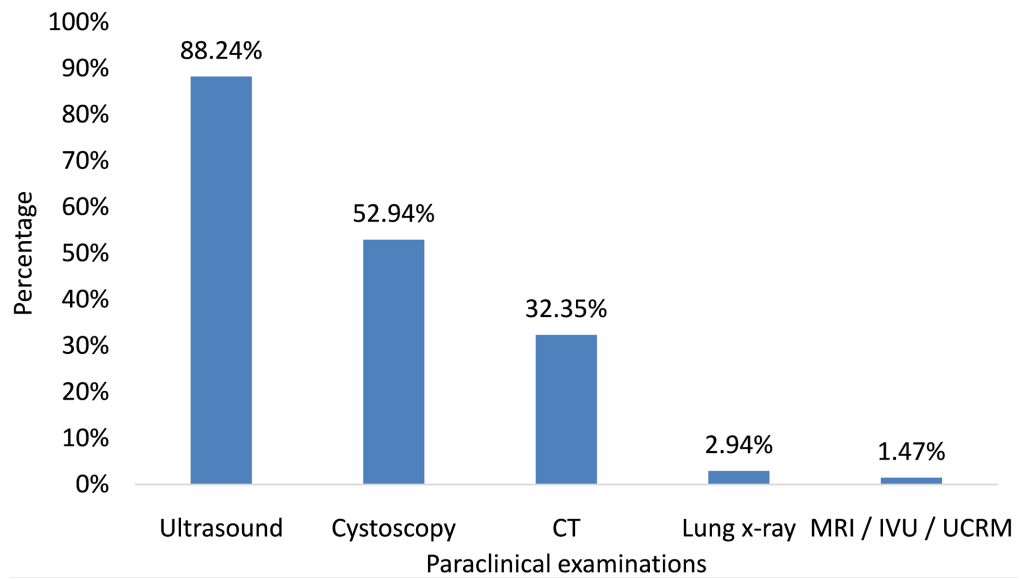


Figure 7. Distribution of patients according to the imaging assessments carried out.

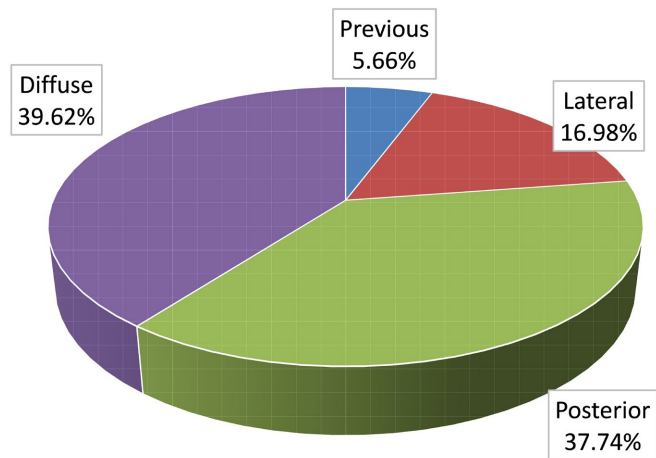


Figure 8. Distribution of patients according to the location of the tumor on ultrasound.

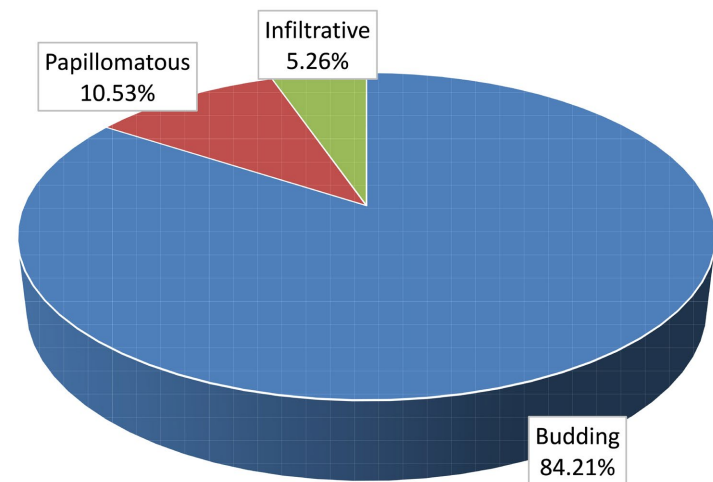


Figure 9. Distribution of patients according to the character of the tumor on uroscan.

Biological aspects:

Blood Count: The average hemoglobin level of the patients was 8.99 g/dl with the extremes of 3.6 g/dl and 16.7 g/dl (**Figure 10**).

Renal assessment: The renal assessment (Creatininemia + Uremia) of 33 (48.53%) patients was disturbed and 7 patients (10.29%) had not carried out this assessment.

Cytobacteriological examination of urine: Cytobacteriological examination of urine was positive in 28 cases (41.18%) and the most frequently found bacterial colonies were successively *E. coli* (7/28), *Klebsiella pneumoniae* (7/28) and *Pseudomonas aeruginosa* (5/28) (**Figure 11**).

Tumor stage: The tumor lesions were limited to the bladder mucosa (T1) in 51.47% of cases and distant metastasis was found in 7 patients (10.29%) (**Table 10**). Furthermore, the most common sites of distant metastases were the lungs and the liver (**Figure 12**).

Histopathological aspects of bladder cancer: The pathological examination was carried out in 22 patients (32.35%). The tumors were represented mainly by urothelial carcinomas (68.18%), squamous cell carcinomas (22.73%) and adenocarcinomas (9.09%).

Table 4. Distribution of patients according to mode of entry.

	Frequency (n)	Percentage (%)
Reference	35	51.47
Coming by himself	19	27.94
Emergency	14	20.59
Total	68	100

Table 5. Distribution of patients according to reason for consultation.

	Frequency (n = 68)	Percentage (%)
Hematuria	59	86.76
Total	31	45.59
Terminale	26	38.24
Initial	2	2.94
Dysuria	28	41.18
Pollakiuria	21	30.88
Burning when urinating	17	25.00
Emergency	9	19.15
Acute urine retention	7	10.29
Hypogastric pain/heaviness	6	8.82

Table 6. Distribution of patients according to ultrasound lesions objectified.

	Frequency (n = 68)	Percentage (%)
Wall thickening 41 77.36	41	77.36
Locoregional invasion 5 09.43	5	09.43
Lymph node metastases 2 03.77	2	03.77
Uretero-hydronephrosis 24 45.28	24	45.28

Table 7. Distribution of patients according to the characteristics of the tumor visualized at cystoscopy.

	Frequency (n = 68)	Percentage (%)
Tumor location		
Left side	18	51.42
Posterior	13	37.14
Right side	10	28.57
Broadcast	7	20.00
Previous	4	11.43
Ureteral meats	2	05.71
Not specified	5	14.29
Character of the tumor		
Budding	31	88.57
Papillomatous	4	11.43
Basis of implantation		
Sessile	34	97.14
Narrow	1	2.86
Bladder capacity		
Normal	29	86.67
Reducted	6	13.33
Associated lesions		
Urethral lithiasis	1	2.86
Suspected bilharziasis	1	2.86

Therapeutic aspects:

In our sample, 40 patients (58.82%) had received treatment. **Table 11** present the distribution of patients according to access to treatment (**Table 11**).

Treatment initiation time: The time for initiation of etiological treatment was on average 44 days \pm 54.18 days with the extremes of 1 day and 215 days; the median being 28 days (**Figure 13**).

Therapeutic modalities: Among the 40 patients, 38 had undergone surgery (endoscopic + conventional) and 2 had received endovesical instillations with Gemcitabine and Docetaxel while chemotherapy and radiotherapy had not been administered to any patient (**Table 12**).

Table 8. Distribution of patients according to the location of the tumor on uro-CT.

	Frequency (n = 68)	Percentage (%)
Posterior	7	36.84
Left side	6	31.58
Previous	5	26.32
Bladder dome	4	21.05
Right side	2	10.53
Whole bladder	4	21.05
Bladder neck	1	05.26
Bladder dome	1	05.26
Ureteral meatuses	1	05.26

Table 9. Distribution of patients according to scanned lesions objectified.

	Effectif (n = 19)	Pourcentage (%)
Wall thickening	10	52.63
Irregularity of the contours of the bladder	1	05.26
Infiltration of perivesical fat	1	05.26
Loco-regional extension	3	15.79
Lymphatic extension	1	05.26
General extension	2	10.53
Resonance on the high device	9	47.37

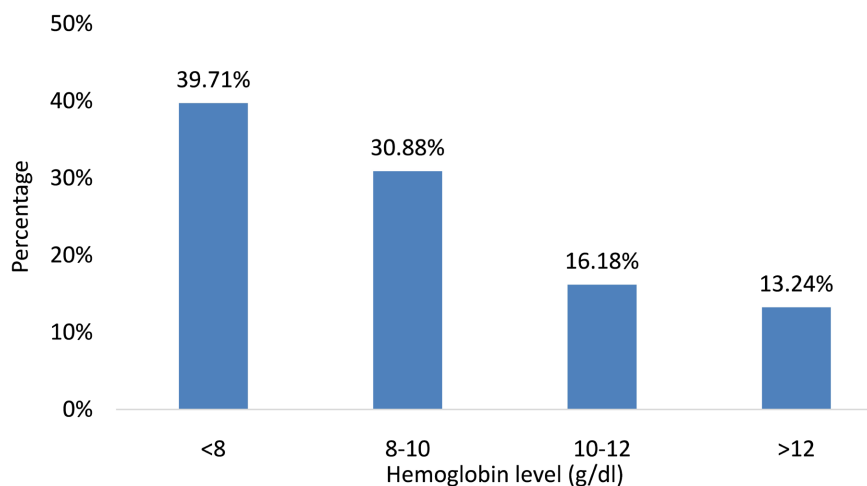


Figure 10. Distribution of patients according to hemoglobin level on admission.

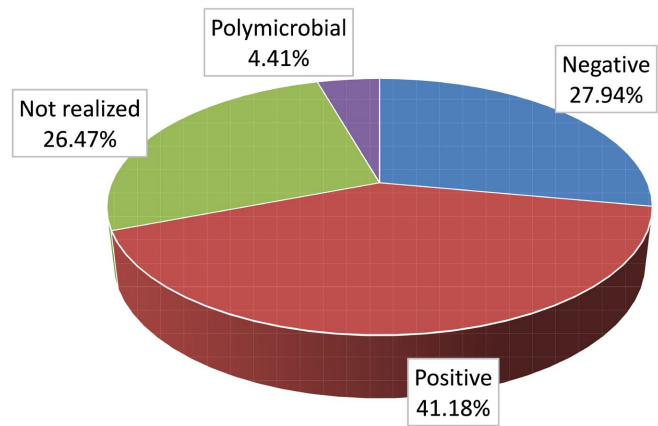


Figure 11. Distribution of patients according to cytobacteriological examination of urine.

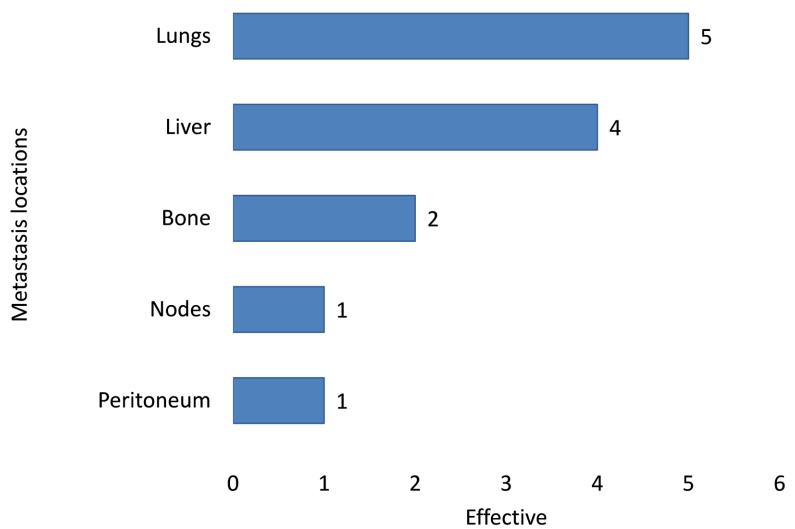


Figure 12. Distribution of patients according to the location of metastases.

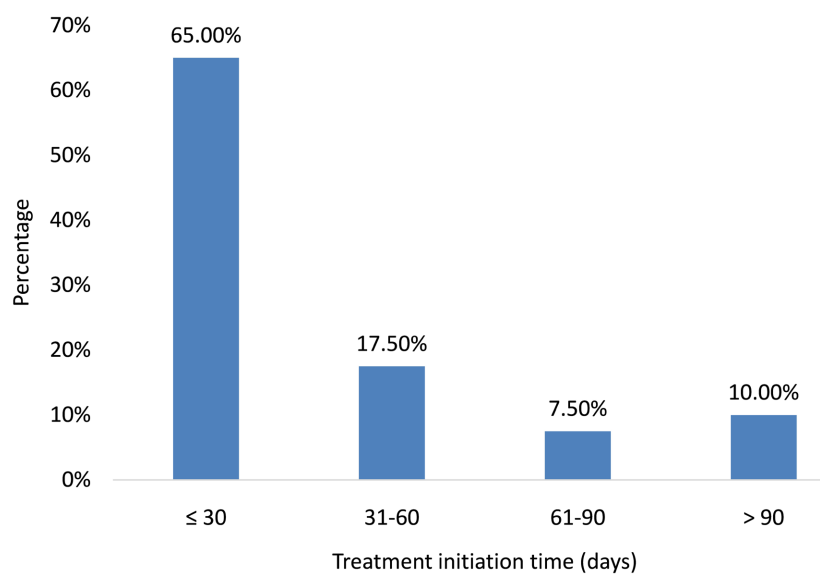


Figure 13. Distribution of patients according to the time for initiation of treatment.

Table 10. Distribution of patients according to clinical stage of tumors.

	Effective (n)	Percentage (%)
TVNIM	35	51.47
TVIM	33	48.53
localized	21	30.88
Locally advanced	5	07.35
Metastatic	7	10.29
Total	68	100

Table 11. Distribution of patients according to access to treatment.

	Effective (n)	Percentage (%)
Etiological treatment	40	58.82
Death before treatment	13	19.12
Lost to sight	15	22.06
Total	68	100

Table 12. Distribution of patients according to therapeutic modalities.

	Effectif (n)	Pourcentage (%)
Endoscopic resection	30	78.95
Endovesical instillations	2	5.26
Total cystectomy	3	7.89
Partial cystectomy	3	7.89
Laparotomy with abstention	2	5.26
Total	38	100

Table 13. Summary of histological types according to different studies.

Authors	Country	Squamous Carcinoma	Urothelial Carcinoma
Djibrilla <i>et al.</i> [58]	Niger	77.77%	22.23%
Diao <i>et al.</i> [59]	Sénégal	58.40%	38.40%
Kamissoko <i>et al.</i> [41]	Mali	57.90%	26.30%
Boureima <i>et al.</i> [40]	Burkina-Faso	35.00%	64.00%
Our study	Bénin	22.73%	68.18%
Botcho <i>et al.</i> [42]	Togo	25.00%	68.75%
Elmahfoudi <i>et al.</i> [44]	Marocco	2.80%	95.10%
Saheb <i>et al.</i> [61]	Lybia	8.9%	87.4%

Post-therapeutic evolution:

The immediate postoperative course was complicated for 15 patients (22.06%). The complications reported were mainly severe anemia (15/38), septic shock (3/38) and death (4/38). The average length of hospitalization was 29 days with the extremes of 2 days and 218 days. This delay was 35.57 days for patients who had undergone surgery.

5. Discussion***Limitations of the study***

The study was conducted in conditions where patients are seen at an advanced stage, do not have the financial means to carry out the staging assessment and especially to face surgical interventions. These situations did not allow to address all aspects of the question and especially to carry out an analytical study that would be necessary in this context.

Prevalence and incidence of bladder tumors: In the study, bladder tumors constituted 3% of urological pathologies hospitalized at the CUUA. It was the second most common urological cancer after prostate cancer. In the literature, the hospital prevalence of bladder cancer is very variable with a prevalence lower than that observed in the present study reported by Odzébé *et al.* in Congo in 2011 (1.8%) [19]. Avakoudjo *et al.* reported in the same department in 2013 a comparable value which was 3.4% [20]. Furthermore, higher values were found by Boureima *et al.* in Burkina-Faso in 2020 (7.80%) and Kamissoko *et al.* in Mali in 2015 (14.62%) [21] [22]. This low prevalence can be explained by the low exposure of beninese people to smoking and the fact that most of the exposed population does not seek specialized modern care.

Age and sex of patients: In the literature, bladder tumors occur in the elderly. The average age of diagnosis of our patients was 57.22 ± 13.79 years with extremes of 16 and 89 years. Our results are similar to those of Boureima *et al.*, Kamissoko *et al.* and Botcho *et al.* with respectively an average age of 55.6 years, 52.8 years and 61 years [21]-[23]. On the other hand, Western and American studies report an average age at diagnosis between 70 and 84 years; particularly higher than those found in Africa [4] [24]-[26]. This difference in age at onset of bladder cancer is linked to the risk factors involved. In Africa, bladder cancer is due to exposure to urinary bilharzia with cancerization of the lesions after 25 to 30 years. On the other hand, in Western countries, this cancer is due to smoking with much later bladder cancer.

The risk factors associated with urothelial carcinoma have historically made it a predominantly male cancer [26]. Thus the study found a sex ratio of 2.09 with a male predominance of 67.65%. These figures are similar to those found in Africa by Botcho *et al.* and Boureima *et al.* with a sex ratio of 2.38 and 2.6 respectively [21] [23]. Some studies, although remaining in the overall trend, found a lower sex ratio of 1.17 and 1.23 [3] [22] or even a very strong one with a sex ratio of 7 found by Elmahfoudi *et al.* in Morocco in 2013 [27]. Indeed, smoking, which is a

main risk factor for bladder tumors in Western countries, is found to be less frequent among women in sub-saharan Africa.

Socio-professional occupation: The majority of patients with bladder tumors were liberal workers [laborers, fishermen and farmers.] (45.59%) and traders (13.24%). According to a report from INSAE (National Institute of Statistics and Economic Analysis), the “informal sector” represents nearly 80% of workers in Benin [28]. Despite their economic and social importance, the majority of workers in the informal sector lack social security or health insurance systems. This situation, combined on the one hand with the precariousness of working conditions and on the other hand with the low income recorded by the latter, makes them particularly vulnerable to health risks [29]. The study by Boureima *et al.* in Burkina-Faso found similar results with 36.1% of farmers [21]. At the same time, Kamissoko *et al.* found 43.2% housewives and 24.3% farmers in Mali [22]. The low socio-economic level of patients with bladder cancer is a constant fact in the literature. But in reality the workers in this sector who are most often affected are those who, by their origin or their professional activity, have been exposed either to bilharziasis or to carcinogenic derivatives.

Modifiable risk factors: In the epidemiology of bladder cancers, the universally recognized modifiable risk factors are: tobacco consumption, occupational exposure to certain chemical agents, urogenital bilharzia, a so-called tropical disease [1] [4] [26] [30].

Concerning smoking, it concerned 17.65% of our patients. This rate is particularly lower than the rates found by Branchereau *et al.* in France, Elmahfoudi *et al.* in Morocco and Boureima *et al.* in Burkina-Faso with respectively 81%, 62.7% and 43.04% of tobacco users [21] [27] [31]. Rates lower than ours were reported by Botcho *et al.* in Togo, Kamissoko *et al.* or respectively 11.11% and 8.1% [22] [23]. This disparity in its results is explained by socio-cultural differences making smoking a more frequent addiction in western and arab countries, placing it in first place among modifiable risk factors [4] [32]. In fact, tobacco is classified as a definite carcinogen for humans [32]-[35]. Tobacco smoke contains more than 4000 chemicals in particle or gaseous form, some of which have been identified as specifically promoting bladder cancer, such as benzo(a) pyrene (BaP) or arsenic [5] [35]. It was estimated that in France, in 2000, 53% of cases of bladder cancer were attributable to smoking in men and 39% in women [33].

The increase in smoking among women leads us to believe that this proportion could increase. It is also important to underline in our context the participation of passive smoking which still proves to be quite harmful [36]-[38].

In Africa and tropical regions, bilharzia is endemic. Ibikounlé *et al.* had determined a prevalence of *S. haematobium* infestation of 32.78% in urine and stools from young schoolchildren aged 4 to 8 years old and attending school in the Atlantic department of Benin [32]. Indeed our study reveals that urinary bilharzia was diagnosed and confirmed in 14.71% of cases. This rate is similar to that found by Botcho *et al.* with 18.52% but lower than that of Kamissoko *et al.* with 25.7%

and Boureima *et al.* with 26.58% history of urinary bilharzia [21]-[25]. This variation is linked to the geo-hydraulic conditions of tropical regions which constitute a suitable habitat for schistosomes. Schistosomiasis is responsible for a particular type of bladder cancer, squamous cell carcinoma, which occurs at a relatively young age between 40 and 50 years [32] [39] [40].

The place of repeated urinary infections, particularly recurrent cystitis, is not negligible in the genesis of bladder cancer. Our study finds 8.82%, a result quite similar to that of Botcho *et al.* with 7.41% of chronic urinary infections in the history of cases of bladder cancer [23].

A risk factor, although prioritized in western and American studies (2nd place) [4] [26] [32], is underestimated in our study; occupational exposure to a carcinogen with just one confirmed case of exposure to hydrocarbons. But it is not outrageous to estimate that more than 50% of our patients would have been in contact with carcinogenic substances (petroleum hydrocarbons for example) either in the context of work or in the sale of adulterated gasoline in Benin. With data based on GLOBOCAN, it is recognized that approximately 5.7% of new cases of bladder cancer are due to occupational exposure to carcinogens [26].

Clinical aspects of bladder tumor

Admission method: Referred patients constituted 51.47% of patients while Kamissoko *et al.* found 28.4% of patients referred in 2015 [22]. Indeed, our study setting is the reference center at the national level, the top of the health pyramid and our patients came from everywhere on the national territory. This is how Djibrilla *et al.* in Niger found 87.42% of referrals in their study to the oncohematology department of the Niamey National Hospital [41].

Reason for admission: Patients do not come for consultation for isolated hematuria but for symptoms of the lower urinary tract including dysuria (41.18%), urinary frequency (30.88%) and even acute retention of urine (10.29%). These symptoms are most often linked to significant hematuria with the formation of blood clots in the bladder and urinary stasis constituting a favorable environment for bacterial proliferation. In the literature, hematuria is the main symptom of bladder tumors [24] [42] [43]. It concerned 86.76% of our patients. This result is comparable to that of the studies by Botcho *et al.* in Togo (61.11%), Boureima *et al.* in Burkina-Faso (85.2%), Djibrilla *et al.* in Niger (69.18%), Kamissoko *et al.* in Mali (87.8%), Kadouri *et al.* in Morocco (93%) and Brauchereau *et al.* in France (75%) [21]-[23] [31] [41] [44]. In these studies, the hematuria reported is macroscopic and presents bladder cancer as a pathology with late onset. Davis *et al.* in a systematic review of the literature revealed that 5% of microscopic hematuria and 16.5% of macroscopic hematuria are due to bladder cancer [45]. This is why the American Urology Association (AUA) calls for vigilance in the face of microscopic hematuria, seen with a dipstick or urine cytology [46]. This hematuria should be monitored by a doctor, preferably a urologist.

Physical signs: The physical signs found in our patients were conjunctival pallor, a sign of clinical anemia, deterioration of general condition and a pelvic mass

respectively in 47.06%, 42.56% and 23.3% of cases. These results overlap with data from the literature [21] [23] [41]. These signs indicate a delay in diagnosis; patients are seen at advanced stages where the cancer already has loco-regional or even general repercussions. Socio-economic issues and cultural considerations must be taken into account.

Paraclinical aspects

Suprapubic bladder ultrasound: In our series, 88.24% of patients performed bladder ultrasound and the tumor was confirmed in 88.33% and uretero-hydronephrosis in 45.28% of cases. These results are similar to those of Kamissoko *et al.*, who found an ultrasound performance rate of 81.1%, the presence of tumor in 85% of cases and uretero-hydronephrosis in 51.6% [22]. In fact, ultrasound is a fairly accessible method from a financial point of view; it finds its indication in the exploration of hematuria. However, ultrasound diagnosis is more uncertain for flat tumors that are not very protruding and for papillary lesions less than 7 or 10 mm [47]-[49].

Diagnostic cystoscopy and RTUV: This endoscopy is indicated in cases of suspected bladder tumor, even when the ultrasound is negative. It was performed in 52.94% of patients and made it possible to visualize the tumor as a budding lesion (88.57%) and has a single location in 60.38% of cases. This result is consistent with that of Djibrilla *et al.* who noted an achievement rate of 59.75%, the budding appearance in 68.42% of cases and the single location in 71.58% [41]. However, the study by Boureima *et al.* had found a higher achievement rate of 90.27% (65/72) [21]. In our study, this imaging had a dual indication: diagnostic and therapeutic (RTUV). Firstly, it makes it possible to obtain anatomical parts for anatomical pathology and also to resect the tumor in a healthy area. Its sensitivity in our study was 97.22%. In the study by Kamissoko *et al.* and that of Djibrilla *et al.*, the sensitivity varied between 90.9% and 92.9% respectively [22] [41]. In addition, multiple samples from healthy mucosa are indicated given the instability of the urothelium [50]. This proves the diagnostic, therapeutic and prognostic value of this examination in bladder tumors.

Computed tomography (CT) examination: In our series, 32.35% of patients performed an abdominopelvic CT scan. The indication was to assess the extent and also to visualize the tumor. Its particularly high cost explains its low implementation rate which varies according to the socio-economic level in studies in the sub-region. The study by Botcho *et al.* had an achievement rate of 33.33%, that of Kamissoko *et al.* had a higher rate of 55.4%, and that of Djibrilla *et al.* had a much lower rate (1.88%) [22] [41]. However, its sensitivity and specificity remain insufficient both for the evaluation of extravesical tumor infiltration and for the detection of metastatic lymph nodes with a discordance compared to the histological diagnosis which can reach 69% and 70% respectively. These figures reach 50% for the 2 parameters with the most modern devices and improve significantly in the advanced stages (\geq pT3) [47] [48] [51].

Biological assessment: In the impact assessment, it is noted that 70.58% of pa-

tients had a hemoglobin level below 10g/dl and 48.53% of patients presented a disturbed renal assessment. Kamissoko *et al.* in their study found 74.32% of patients with a hemoglobin level below 11 g/dl and elevated serum creatinine in 32.4% of these patients [22]. It is obvious that anemia and obstructive renal failure constitute the most frequent repercussions of bladder tumors [42].

Tumor stage: In our series, bladder tumors infiltrating the muscle (TVIM: \geq T2) represented 48.53% of cases. In the literature, this relationship varies greatly in relation to the socio-economic conditions of patients leading to late consultations. Indeed, Kamissoko *et al.* in Mali found 93.24% TVIM while Elmahfoudi *et al.* in Morocco found 29% of infiltrating tumors [22] [27]. In a French VICAN cohort in 2018, Pignot *et al.* had reported that TVIM constituted 75.1% of new cases of bladder cancer [52]. It appears to us that the diagnostic delay contributes to this disparity in tumor stages at diagnosis.

At the same time, we had 10.29% of metastatic TVIM in our series. This is consistent with the results of Kamissoko *et al.* (13.6%) and Djibrilla *et al.* (15.09%) while Elmahfoudi *et al.* found 3.06% metastases [22] [27] [41].

Histo-pathology of bladder tumors

The pathological examination was carried out by 22 patients (32.35%) with identification of 68.18% of urothelial carcinomas, 22.73% of squamous cell carcinomas and 9.09% of adenocarcinomas. These results diverge from the trend in schistosomiasis endemic areas which puts squamous cell carcinoma at the forefront [22] [41] [51]-[55]. Previously, squamous cell carcinoma, associated with schistosomiasis infection, was responsible for most bladder cancers in African countries such as Egypt, Senegal [32] [40]. However, over the last decade, there has been a substantial decline in schistosomiasis-associated bladder cancer and an increase in so-called urothelial transitional cell carcinoma, probably due to an increase in smoking (17.65% in our study). Some studies have made the same observation as ours [23]. However, the poor performance of histology in our study does not allow a reliable conclusion. However, certain studies have noted the same observation as ours as shown in **Table 13**.

Therapeutic aspects

In our study, 58.82% of patients benefited from a therapeutic attitude targeted at cancer (Surgery/Chemotherapy/Radiotherapy). Indeed a deplorable phenomenon was revealed in our study, the disappearance of patients after diagnosis of cancer mentioned (22.06%). At the same time, 19.12% of patients were at such an advanced stage that death ensued even before a treatment plan was established. The financial burden of treatment is a source of despair for patients suffering from this condition. And common thing is that people at risk mostly have a low socio-economic level.

The other studies do not highlight this fact but it remains to be noted that in the study by Djibrilla *et al.*, 10.06% of patients did not have a specified treatment received and for those with a specified treatment, it was etiological in 64.11% quite similar to our result [41]. Kamissoko *et al.* found 29.79% of etiological treatment

[21]. Note that the latter had 93.24% TVIM. It seems that the more advanced the bladder tumors are, the fewer therapeutic possibilities are available.

In our therapeutic arsenal, RTUV accounted for 78.95% of treated cases and 44.11% of all patients. Partial and total cystectomy each concerned 4.41% of patients. BCG therapy was indicated in 2 patients. Chemotherapy and radiotherapy were not therapeutic options applied in this series.

These results are in disparity with those of Kamissoko *et al.* where partial cystectomy and RTUV interested in the same proportions 5.40% of these patients (n = 4) [22]. In addition, 03 of these patients had received chemotherapy and there was no total cystectomy performed or BCG therapy.

In contrast, Djibrilla *et al.* noted in their study at the oncohematology department of the Niamey National Hospital, 58.49% chemotherapy, 5.59% partial cystectomy and only one case of endoscopic resection [41]. It should be noted that in this center there is a policy of free care for women with cancer.

Indeed, the technical platform, the availability or not of chemotherapy molecules, the financial weight, the tumor stage, comorbidities and the general and psychological state are all factors which affect the patient care protocol.

In our series, endoscopic resection ideally responded to the predominance of tumor limited to the mucosa (TVNIM). These tumors generally have a good prognosis and thus offer much more hope to patients who have the means. However, the risk of recurrence remains permanent and progression to IMVT is not excluded. Early cystectomy is strongly recommended in patients with high-risk NIMVT who are non-responders to BCG and delay in treatment is associated with reduced recurrence-free survival [53] [54].

The CUUA has experienced 3 total cystectomies for which 2 COFFEY type urinary diversions and a bilateral ureterostomy were performed.

Regarding treatment, it should be noted that blood transfusion was necessary for 52.50% of treated patients and 30.88% of all patients. Indeed, the need for labile blood products is particularly high in this pathology given the macroscopic hematuria which constitutes the main symptom. This is how Kamissoko *et al.* had found up to 43.2% transfusion and Djibrilla *et al.* reported 11.95% of patients having received transfusion [22] [41].

Evolutionary aspects

Aftermath of surgery: In our series, the postoperative course was simple for 60.53% of patients. The complications noted ranged from severe anemia (39.47%) to death (10.52%). Our results are comparable to those of Kamissoko *et al.* who found postoperative morbidity at 21.1% with 10.5% of these patients dying from postoperative complications [21]. Indeed, the patient's comorbidities are likely to alter the tolerance of treatments and lead to early death [54].

Survival: At the end of the study, 8 patients (11.76%) are known to be still alive. Among these patients, 2 experienced a recurrence in less than a year, the rest in remission. In the study by Djibrilla *et al.*, 22.64% of patients were alive [41]. For a study extending over a period of 8 years, this rate is particularly higher. This could

be explained by the improvement in diagnostic means, multidisciplinary care and free care for women with cancer in Niger.

In our context, patients treated for bladder cancer are almost all lost to follow-up. Often at the end of modern care considered expensive, patients' parents and sometimes the patients themselves prefer to abandon all care to die at home. From all points of view, it would be wise to set up an awareness-raising system on these pathologies at the level of the Ministry of Health in order to recover the disease from its beginnings and offer patients the radical treatments which are the most effective [56]-[60].

Lost to sight: Since the announcement of the cancerous disease, some patients have been discharged against medical advice and others have not returned for check-ups. This fact resulted in 61.71% being lost to follow-up in our study. A large proportion of patients were at an advanced stage and only benefited from palliative care. They could not bring themselves to wait for the unfortunate news within the walls of the hospital. Among those who have had surgery, the financial burden has been a great burden and a source of despair. To date, we cannot truly say which of them are still alive or not, except for those who have returned for clinical monitoring.

This situation is not new in Africa where there is a lack of appropriate health coverage and a population with a low socio-economic level [30] [39].

Morbidity: In this series, the mortality rate is 26.47%. This rate, not taking into account the current status of the 61.47% of patients lost to follow-up, certainly remains quite underestimated. Indeed, the studies by Djibrilla *et al.* and Kamisoko *et al.* had found higher mortalities, respectively 33.96% and 44.6% [22] [41]. However, a particularly low rate was found by Elmahfoudi *et al.* in Morocco in 2012 (2.2%) [27].

6. Conclusion

Bladder tumors continue to constitute a public health problem. This retrospective study devoted to the management of bladder tumors in Cotonou allowed us to discover the diagnostic and therapeutic limits of these tumors in relation to the lack of financial means justifying late recourse to care.

Conflicts of Interest

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

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