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Results of Trans-Urethral Resection of Bladder (TURB) for the Treatment of Non-Infiltrating Bladder Tumors (NMIBT) in Musk in Bouake

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Abstract

Background: bladder tumors rank 2nd among urological tumors in sub-Saharan Africa, particularly in Côte d'Ivoire. **Objective**: to report the results of transurethral resection of the bladder (TURB) for the treatment of non-muscle-infiltrating bladder tumors (NMIBT) in Bouaké. **Patients and methods**: we conducted a cross-sectional, descriptive study of transurethral resection of the bladder (TURB) for the treatment of non-muscle-infiltrating bladder tumors (NMIBT) between January 2022 and April 2023. All patients and their families were informed in advance and had signed an informed consent form. All patients with a non-muscle-invasive bladder tumor confirmed by an initial TURB were included, and patients with a bladder tumor infiltrating the bladder muscle were excluded. Diagnosis was based on cystoscopy and anatomopathological examination of resection shavings. Parameters studied were: age, sex, risk factors, reason for consultation, clinical signs, cystoscopy findings, stage, grade, Evolution. **Results**: 17 patients with a mean age of 53.7 years (22 - 73 years) underwent trans-ureteral bladder resection to treat a non-muscle-infiltrating bladder tumor (NMIBT). Male gender predominated with 88.23% (n = 15), the majority of patients came from the ME region with 47.05% (n = 8), farmers were the most numerous (52.94%; n = 9). The most frequent reason for consultation was macroscopic hematuria with 64.1% (n = 11), risk factors were dominated by urinary bilharziasis with 70.58% (n = 12), physical examination was normal in 47.05% (n = 8). Hemoglobin (HB) levels were between 7.5 and 8.5 g/dl in 52.94% (n = 9). On cystoscopy, the tumor was budding in 76.45% (n = 13), the localization was trigonal in 52.9% (n = 9) and the base of implantation was sessile in 70.52% (n = 12). On ultrasound,

the tumor was 3 cm or larger in 70.52% (n = 12). Therapeutically, 82.35% (n = 14) of patients received a blood transfusion. TURB was complete in the majority of cases 88.23% (n = 15). Squamous cell carcinoma was the most frequent histological type with 76.47% (n = 13). PTa and PT1 grade accounted for 23.52% (n = 4) and 76.47% (n = 13) respectively. High-grade PT1 accounted for 64.70% (n = 11). Follow-up to TURB was straightforward in 94.11% (n = 16). At three months post-TURB, seven patients presented a tumor recurrence, with 41.17% (n = 7) requiring a second TURB. At 6 months, follow-up noted 14 patients free of any clinical or endoscopic signs of bladder tumors. **Conclusion**: TURB is a safe and effective means of treating non-muscle-invasive bladder tumors.

Keywords

Bladder Tumor, NMIBT, TURB, Squamous Cell Carcinoma

1. Introduction

Worldwide, bladder tumors rank 11th in terms of incidence and 14th in terms of deaths, all cancers combined, according to GLOBOCAN data published by the World Health Organization (WHO) in March 2021. Bladder cancer is the second most common urological cancer in the UNITED STATES OF AMERICA, with an estimated 80,470 new cases in British Columbia in 2019, an average of more than 220 new cases per day [1]. In North and sub-Saharan Africa, bladder tumors are a public health problem, ranking second only to prostate cancer. They occur mainly in older people, with a large male predominance, and the vast majority of cases (80%) are diagnosed after the age of 50 [2] [3]. In Côte d'Ivoire, bladder tumors are common, with a high mortality rate of 16.2%, representing the second most common cause of death in urology departments after prostate cancer [4]. Because of its size and, above all, its aggressiveness, bladder tumors represent a challenge for surgeon-urologists, despite notable advances in treatment in recent years. The etiology of bladder tumors is poorly understood, but certain risk factors have been suggested, the most important of which is urinary bilharziasis in Africa, particularly in the Ivory Coast [5] [6], bladder tumors fall into two groups: muscle-infiltrating tumors (30%) and non-muscle-infiltrating tumors (NMIT), estimated at 70% [6]. Non-muscle-infiltrating bladder tumors (NMIBT) comprise three (03) tumor categories represented by non-infiltrating papillary tumors (pTa), papillary carcinomas infiltrating the chovium (pT1) and carcinoma in situ (cis) [7]. The management of non-infiltrating bladder tumors is based on trans-ureteral resection of the bladder associated or/and not with endo-vesical installations by chemotherapy or immunotherapy.

In Bouaké, to our knowledge, no study has been carried out on NMIBT. The aim of the present study is to report the results of transurethral resection of the bladder for the treatment of non-infiltrating bladder tumors in Bouaké.

2. Patient and Methods

2.1. Design and Approval of This Study

After obtaining approval from the ethics committee of the private structures and the university hospital center of Bouaké, Côte d'Ivoire, we conducted a descriptive cross-sectional study of transurethral resection of the bladder (TURB) to treat a non-infiltrating bladder muscle tumor between January 2022 and April 2023. All patients and their families were informed and had signed an informed consent form.

2.2. Inclusion and Non-Inclusion Criteria

All patients with an anatomopathologically confirmed non-infiltrating muscle bladder tumor at first trans-ureteral bladder resection were included in the present study. Patients with muscle-infiltrating bladder tumors and those without histological evidence were excluded from this study. The diagnosis of a bladder tumor was suspected on cystoscopy. Diagnostic certainty was achieved by histological examination of the resection shavings. All trans-urethral resections of the bladder were performed after a preoperative workup consisting of blood count, cephalin kaolin time (CKT), prothrombin rate (PT), uremia, creatinemia, blood grouping, electrocardiogram, chest X-ray and fasting venous glucose. We ensured urine sterility by performing a urine cytobacteriological examination for all patients. The anaesthetic consultation enabled us to specify the route of anaesthesia. The various TURBs were performed by the same surgeon-urologist using a 26 CH sheath resection with 30˚ optics, electric current and a continuous irrigation system using glycol with coagulation cut set at 130˚/70W. The entire tumor is completely resected, right down to the bladder muscle. At the end of the procedure, the resected tissue fragments are recovered with the ELLIK bulb fixed in formalin for anatomopathological examination. Haemostasis of bleeding areas is achieved with the electric ball and a dual-current catheter is inserted, with the balloon inflated to 20 cc in the bladder for irrigation-washing. After this first TURB, the patient is followed up with follow-up cystoscopies at 3 and 6 months to check for tumor recurrence. In the event of recurrence, a second TURB is performed with anatomopathological examination.

Data were collected using a survey form containing the parameters under study. Data entry was performed using Word software. Epi. Info 7 software was used for data analysis. The parameters studied were as follows: Age, Sex, Risk factors, Reason for consultation, Clinical signs, Cystoscopy findings (site, size, number, aspects), Tumor stage, Grade, Evolution, and Mortality.

3. Results

During the study period, 17 patients were managed for non-infiltrating muscular bladder tumors by transurethral resection of the bladder (TURB). The results were as follows.

3.1. Socio-Demographic Data

3.1.1. Age

The mean age of patients was 53.7 years, with extremes of 22 and 73 years.

3.1.2. Sex

Males predominated with 88.23% (n = 15).

3.1.3. Region of Origin

The majority of patients were from the ME region with 47.05% (n = 8); Table 1.

3.1.4. Profession

Farmers were the most numerous with 52.94% (n = 9); Table 2.

3.2. Clinical Data

3.2.1. Reason for Consultation

Macroscopic hematuria accounted for 64.7% (n = 11). The other reasons were dysuria, micturition urgency and micturition burning; Table 3.

Table 1. Distribution of patients by origin.

REGION	WORKFORCE	PERCENTAGE (%)
GBEKE	2	11.76
ME	8	47.05
WORODOUGOU	1	5.88
PORO	1	5.88
SOUTH COMOE	5	29.41
TOTAL	17	100

Table 2. Distribution of patients by profession.

PROFESSION	WORKFORCE	PERCENTAGE (%)
Jobless	5	29.41
Cultivator	9	52.94
Teacher	1	5.88
Retailer	1	5.88
Student	1	5.88
TOTAL	17	100

Table 3. Breakdown of patients by reason for consultation.

REASON FOR CONSULTATION	WORKFORCE	PERCENTAGE (%)
Macroscopic hematuria	11	64.70
Mictional imperiosity	2	11.76
dysuria	1	5.88
urinary burning	3	17.64
TOTAL	17	100

3.2.2. Risk Factors

The main risk factor was urinary bilharziasis in 70.58% (n = 12); Table 4.

3.2.3. Physical Signs

- In the majority of cases, the physical examination was poor, with no signs found in 47.05% (n = 8).
- 23.52% (n = 4) of patients presented with retention due to bladder clotting, necessitating unclotting with a Gouverneur catheter, insertion of a dual-stream catheter for bladder irrigation-washing, and administration of hemostatic agents.
- 11.76% (n = 2) of patients presented with hemorrhagic shock. They benefited from a blood transfusion coupled with emergency measures; Table 5.

3.3. Paraclinical Data

3.3.1. Hemoglobin Level

Hemoglobin levels were between 7.5 and 8.5 g/dl in the majority of patients (n = 9); Table 6.

Table 4. Distribution of patients by antecedents.

BACKGROUND	WORKFORCE	PERCENTAGE (%)
Tobacco	2	11.76
Bilharzia	12	70.58
Not Found	3	17.64
TOTAL	17	100

Table 5. Distribution of patients by physical signs.

PHYSICAL SIGNS	WORKFORCE	PERCENTAGE (%)
Bladder clot retention	4	23.52
Hemorrhagic shock	2	11.76
Chronic retention of urine	3	17.64
No signs	8	47.05
TOTAL	17	100

Table 6. Distribution of patients by hemoglobin level.

HEMOGLOBIN RATE (g/dl)	WORKFORCE	PERCENTAGE (%)
5 - 7	2	11.76
7.5 - 8.5	9	52.94
9 - 10.5	4	23.52
11 - 12.5	1	5.88
Sup 13	1	5.88
TOTAL	17	100

3.3.2. Cystoscopy

- The tumor had a budding appearance in 76.45% (n = 13).
- Trigonal localization was frequent in 52.94% (n = 9).
- The base of tumor insertion was sessile in 70.52% (n = 12). (Table 7)

3.3.3. Tumor Size on Ultrasound

Tumor size was less than or equal to 3 cm in the majority of cases, 70.52% (n = 12).

3.4. Theurapeuttic Data

3.4.1. Transfusion

The majority of patients received a blood transfusion (82.35%, n = 14).

3.4.2. TURB Type

Trans-ureteral bladder resection was complete in the majority of cases, with 88.23% (n = 15).

Resection was incomplete in one patient 5.88% (n = 1).

3.4.3. Anatomopathology

The most frequent histological type was squamous cell carcinoma with 76.47% (n = 13). (Table 8)

3.4.4. Histological Grade and Stage

- PTa tumors were represented in 23.52%.
- PT1 tumors were more dominant on RTUV specimens at 76.47%. (Table 9)

Table 7. Distribution of patients by cystoscopy result.

CYSTOSCOPY RESULTS		WORKFORCE	PERCENTAGE (%)
Tumor appearance	solid	4	23.52
	papillary	13	76.45
Location	Trigone	9	52.94
	Left side wall	1	5.88
	Right side wall	2	11.76
	Bladder dome	4	23.52
	Left and right-side panel	1	5.88
Insertion base	Sessile	12	70.52
	narrow	5	29.41

Table 8. Distribution of patients by histological type.

HISTOLOGICAL TYPE	WORKFORCE	PERCENTAGE (%)
Urothelial carcinoma	2	11.76
Squamous cell carcinoma	13	76.47
Bladder adenocarcinoma	2	11.76
TOTAL	17	100

Table 9. Distribution of patients by stage and grade.

TUMOR STAGE AND GRADE		WORKFORCE	PERCENTAGE (%)
Stadium	Pta	4	23.52
	Pt1	13	76.47
Grade	High-grade Pta	6	35.29
	Pt1 high grade	11	64.70

3.4.5. Immediate Post-TURB Follow-Up

Postoperative management was straightforward in the majority of cases, 94.11% (n = 16). One patient presented a hemorrhage requiring a blood transfusion postoperatively, 5.88% (n = 1).

3.4.6. Evolution

- **At three (03) months**
  - Seven patients underwent a second transurethral bladder resection for tumor recurrence 41.17% (n = 7); Table 10.
  - Pathological examination of the resection specimens from this second resection was consistent with squamous cell carcinoma.
  - The Pta grade represented 28.57%.
  - The Pt1 guard represented 71.42%.

Among his patients who presented with tumor recurrence, none had an infiltrating bladder tumor after the second trans-urethral resection of the bladder (TURB).

- **At three (06) months**
  - ✓ Tumor recurrence in a patient who refused treatment;
  - ✓ Two patients were lost to follow-up;
  - ✓ 14 other patients were free of any symptomatology related to the bladder tumor.

4. Discussions

Bladder tumors are the second most common tumor of the urogenital tract, after the prostate. They fall into two groups. Those that infiltrate the bladder muscle, known as muscle-infiltrating bladder tumors (MIBTs), and non-muscle-infiltrating bladder tumors (NMIBTs), which account for the majority of bladder tumors (over 80%) [8] [9]. The incidence of bladder tumors increases with age and is now a public health problem in North and Sub-Saharan Africa [2] [3]. In our present study, the mean age of patients was 53.7 years. This result is much lower than that reported by several authors in the literature, which is greater than or equal to 60 years [8] [10] [11]. It is also close to that reported in BOUREIMA's study of bladder cancers in Burkina Faso, which was 55.6 years, but higher than that of MOUAD STATOUA in MOROCCO [12], which found an average age of 33 years. These results show that non-invasive bladder tumors are a pathology of interest to all ages.

Table 10. Distribution of patients by 3-month outcome.

EVOLUTION	WORKFORCE	PERCENTAGE (%)
Tumor recurrence	7	23.52
No recurrence	10	58.82
TOTAL	17	100

The etiology of bladder tumors, and in particular NSTEMI, remains poorly understood. However, certain risk factors have been evoked and proven. These factors can be summarized as infectious processes, notably urinary bilharziasis, irritative factors and smoking [5] [6]. In our present study, bilharziasis was the most frequent risk factor, accounting for 70.58%. This result corroborates those of studies carried out by authors in sub-Saharan Africa [5] [6], but differs from those reported in North Africa, which are more in favor of high exposure to tobacco [3] [12]. Our result could be explained by the presence of endemic bilharzia zones in certain regions of the Ivory Coast. The clinical expression of bladder tumors is well known and is represented by macroscopic haematuria occurring at the end of micturition in the majority of cases [12]. However, other symptomatologies such as bladder irritation are manifestations of bladder tumors [3]. In the present study, macroscopic hematuria was the main expressive sign with 64.7%. Our result confirms the thesis of several authors in the literature that the presence of macroscopic hematuria is suggestive of a bladder tumor until proven otherwise [3] [10] [12]. The diagnosis of a bladder tumor relies on cystoscopy. It visualizes the tumor and makes the clinical diagnosis. It also enables the tumor to be mapped, specifying its location, number, appearance and, above all, its base of implantation [12]. In our series, papillary tumors were the most frequent with 76.52%, the predominant site was the bladder trigone in 52.94% and in 70.52% of cases, the base of implantation of the tumor was sessile. However, diagnostic certainty for non-muscle-infiltrating bladder tumors is based on anatomopathological examination of trans-urethral resection of bladder (TURB) specimens [13]. According to several authors, trans-urethral resection of the bladder should be the procedure of choice for bladder tumors, as it is both diagnostic and therapeutic [13] [14]. TURB allows complete resection of the tumor, down to the bladder muscle, and subsequent haemostasis of haemorrhagic areas. The diagnosis of a non-muscle-infiltrating bladder tumor is made on the resection specimens after histological examination [6]. In the present study, the first trans-urethral resection of bladder (TURB) was performed in all our patients. Post-operative management was straightforward in 94.11% of our patients, and our results counterbalance the numerous complications reported by authors such as COLLADO *et al.* [8]. The author reports 145 complications in a series of 2821 cases of trans-urethral bladder resection for the management of superficial bladder tumors. Our results in the present study may be explained by the surgeon's caution: anatomopathological examination of the first TURB specimens showed squamous cell carcinoma to be the most common histological type

(76.47%). This result corroborates those reported by several authors [14] [15]. However, STATOUA in MOROCCO [12] reported 100% urothelial carcinoma in his study. Our result could be explained by the occurrence of tumors in bladders infected by schistosoma haematobium, *i.e.* urinary bilharziasis.

Non-muscle-infiltrating bladder tumors (NMIBTs) comprise three distinct tumor categories, in terms of morphology and evolutionary potential. These are non-infiltrating papillary tumours (PTa), papillary carcinomas infiltrating the chouion (PT1) and carcinoma in situ (CIS) [7]. In the present study, in addition to the histological type found, PT1 tumours were more dominant with 76.47%, followed by PTa tumours with 23.52%. High-grade PTa and PT1 tumours accounted for 35.29% and 64.70% respectively. Our results confirm the definition of non-muscle-invasive bladder tumours. Non-muscle-invasive bladder tumours are scarred, with a high potential for recurrence and, above all, progression [15] [16]. In the present study, follow-up three months after transurethral resection of the initial bladder showed a recurrence rate of 47.17%, in those who were treated with a second TUR. Histological examination of the specimens from this second RTUV did not reveal any tumour infiltration of the bladder muscle. Our rate is lower than that reported by STATOUA in his study in MOROCCO, which was 36.4%. However, this recurrence rate has tended to regress in recent years in view of the many advances in the treatment of non-muscle-infiltrating bladder tumours [17]. The rate of progression was 17% in the fourth decade, and now stands at 4% [13]. At 6-month follow-up, all seven patients who underwent the second TURV were free of clinical and endoscopic symptoms. We noted two cases of loss of sight. The other fifteen patients had a good clinical and radiological evolution.

The present study has its limitations, both in terms of the small sample size and the fact that it is only descriptive. It is only descriptive, so it would be useful to carry out further studies to assess our results in depth.

5. Conclusion

Based on our results, transurethral resection of the bladder (TURB) is a safe and effective treatment for non-muscle-invasive bladder tumours (NMIBT). However, in light of our results, our study reinforces the case for a second RTUV.

Authors' Contributions

AVION Kouassi Patrice, AKASSIMADOU N'diamoi, AGUIA Brice: statistical analysis and re-reading of the article as well as its drafting.

ZOUAN Freddy, ALLOKA Venance, KAMARA Sadia, DJE Koffi: documentary research and editing.

Ethical Considerations

We protected the confidentiality of the information collected during the survey. An anonymity number was assigned to each survey form, with authorisation

obtained from the administrative and health authorities.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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