

Original Research Article

Bladder Cancer: Epidemiological, Clinical and Histological Aspects at Zinder National Hospital (HNZ) Niger

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Abstract: Objective: To present the epidemiological, clinical and histological aspects of bladder cancer at the National Hospital of Zinder (Niger). **Materials and methods:** This is a retrospective, descriptive and analytical study covering the period from June 2014 to January 2022 concerning the files of patients followed up for bladder cancer. The patients come from three regions bordering Zinder (Maradi, Agadez, Diffa). The parameters studied were epidemiology, age, sex, clinical signs, paraclinical tests, and histological results. **Results:** A total of 6724 patients were consulted during the period, which brings to 1.23% the incidence of bladder cancer at Zinder national hospital (HNZ). The median age of patients was 56.83 years with extremes of 24 and 77 years. The sex ratio was 7/1. A history of chronic smoking for an average of 5 pack-years was found in 8 cases (9.63%). Among the other risk factors, a history of urinary schistosomiasis in 58 cases (69.87%). The reasons for consultation were: total hematuria 63 cases (76.41%), permanent pollakiuria 8 cases (9.32%), acute urine retention 7 cases (8.33%), renal failure 3 cases (3.54%), exophytic tumor 2 cases (2.40%). Additional diagnostic tests were: ultrasound, cystoscopy, computed tomography (CT). Histology found 66 cases (79.51%) of squamous cell carcinoma, 15 cases (18.07%) of urothelial carcinoma and 2 cases (2.42%) of adenocarcinoma.

Keywords: Bladder cancer, Hematuria, Cystoscopy, Bilharziasis, Zinder.

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INTRODUCTION

Bladder cancer is the second most common malignancy of men urogenital tract, following prostate cancer. its incidence rises with age. About 550,000 cases of bladder cancer were recorded in an estimated GLOBOCAN 2018 statistics with 4/1 sex ratio. This accounts for roughly 3% of all new cancer diagnoses. Urothelial carcinoma accounts for 90-95% of malignant bladder tumors, followed by squamous cell carcinoma [1-5]. Cigarette smoking is the most important risk factor for urothelial carcinoma while bilharsia is the main factor for by squamous cell carcinoma [6-8]. The squamous cell carcinoma is almost specific to endemic areas of schistosomiasis in Africa and the Orient [6, 9-11].

The clinical manifestations are polymorphic dominated by hematuria and symptoms of the lower urinary tract. Several paraclinical examinations, in particular ultrasound, cystoscopy, and CT, help to

suspect the diagnosis with different sensitivity [1, 8, 10, 12, 13].

The objective of this study was to present the epidemiological, clinical and histological aspects of bladder cancer at the Zinder National Hospital (Niger).

PATIENTS AND METHODS

This was a descriptive retrospective study conducted in the urology department of Zinder National Hospital (HNZ). It concerned the period June 2014 to January 2022. A total of 83 patient files admitted for bladder tumours were selected. Patients whose diagnosis of bladder cancer was made either by cystoscopy, CT (computed tomography), or confirmed by histology were included in the study. The variables studied were the frequency, age, sex, the clinical aspects, the histological type.

The data were collected in Excel 2013 software and analyzed with Epi-info 7.

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RESULTS

A total of 6,724 patients were consulted during the study period, which shown an incidence of 1.23% of bladder cancer at Zinder National Hospital.

The average age was 56.83 years with extremes of 24 and 77 years the distribution of patients by age groupe is is summarized in Figure 1. The sex ratio was 7/1.

A history of chronic smoking with an average of 5 pack-years was found in 8 cases (9.63%). Among the other risk factors, a history of urinary schistosomiasis was found in 58 cases (69.87%). The reasons for consultation or referral are listed in Table I.

Complementary diagnostic tests are listed in Figure 2. Histology found 66 cases (79.51%) of squamous cell carcinoma, 15 cases (18.07%) of urothelial carcinoma and 2 cases (2.42%) of adenocarcinoma.

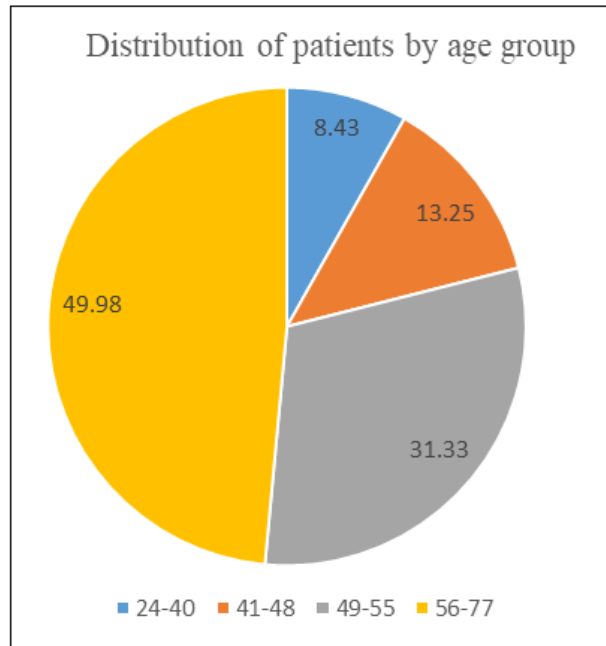


Figure 1: Distribution of patients by age group

Table I: Reasons for consultation or referral

Reasons for consultation or referral	Number of cases	Percentage
Total Hematuria	63	76,41
Permanent pollakiuria	8	9,32
Acute retention of urine	7	8,33
Renal failure	3	3,54
Exophytic tumor	2	2,40
Total	83	100

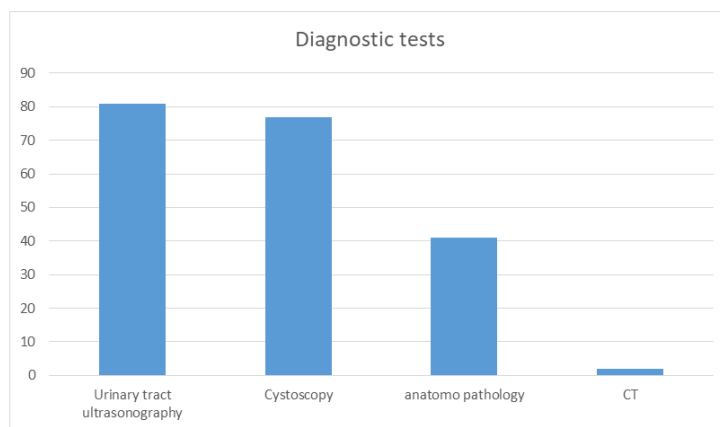


Figure 2: Complementary diagnostic tests

DISCUSSION

Bladder cancer is the second malignant tumor of the male urogenital tract after prostate cancer, with about 550,000 new cases and 200,000 deaths per year [1-3]. Its incidence rates are higher in Europe and North America, with a strong predominance in men and the elderly [14]. In Africa too, it is the second cancer of the urogenital tract according to several studies [6, 15, 16]. Its incidence is variable according to the studies. A meta-analysis by Adeloye *et al* in 2019 reported by Cassell estimated the pooled incidence of bladder cancer in Africa was 7.0 (95% confidence interval: 5.8 - 8.3) per 100,000 population in men and 1.8 (95% confidence interval: 1.2 - 2.6) per 100,000 in women [6].

The majority of studies on this subject are hospital-based. Our rate is 1,23% of consulted patients, while DIAO reported 2,5% at Dakar and 6,4% at Kano Nigeria [17]. Our rate is lower due to the semi-desert situation of Niger.

Bladder cancers are grouped into two categories; tumors not infiltrating the bladder muscle (TNIBM) and tumors infiltrating the bladder muscle (TIBM) [10, 8]. TNIBM are generally found among urothelial cancers in 70 to 80% of cases [8, 18, 19].

Squamous cell cancers can be considered to be immediately muscle invasive because of submucosal, localization of *Schistosoma haematobium* eggs and chronic manifestations of schistosomiasis [9, 11, 20].

Bladder cancer is a tumor of the elderly, the average age of onset is between 65 and 73 years according to studies in developed countries [1, 19].

In Sub-Saharan Africa bladder cancer occurs earlier in a range of 45-58.6 years in a meta-analysis by Cassell compiling 13 articles on bladder cancer in Africa [6, 17]. The median age of our patients was 56.83 with extremes of 24 and 77 years. The median age was 60 years old in Burkina, 59 years old in Morocco and 63 years old in Libya. The mean age of our patients was at concordance with data from the sub-regional literature [10-12, 15, 16].

This difference in occurrence between the industrialized countries and African countries can be explained by the low life expectancy of African populations and the majority presence of squamous cell carcinoma whose outbreak seems earlier. Bladder cancer incidence has been found to be positively correlated with human development index (HDI), and, on the possibly due to industrial chemical exposure and access to tobacco [1].

The evolution of the level and the life expectancy of the populations of Niger after the years 1999 could justify that the age of onset in our series is

delayed compared to the results of Nouhou in 1999 and Salamatou in 2009 in Niger with respectively 40 years and 43 years [9, 21]. This change in the standard of living in Niger was correlated with development; health structures, drinking water supply and especially the program to eradicate neglected diseases like schistosomiasis, with the deworming of children at the start of each school year. Desertification has reduced the number of permanent ponds and their duration. All of these conditions have had the result of reducing regular *Schistosoma haematobium* infestations.

Men are more affected than women, the sex ratio in the world was estimated at 3-4 men for one woman with disparities by location [1-5, 7, 14]. The sex ratio in sub-Saharan Africa reported in an analysis by Cassell ranged from 0.9/1 (Rambau *et al.*, Tanzania) to 8.8/1 (Sharif-Askari *et al.*, Libya). We have a ratio of 7/1 which is within the range of this meta-analysis. This high disparity is often based on cultural aspects. It is rare in our societies to find girls swimming in the backwater. Smoking is exceptional among African women. The terminal hematuria of urinary schistosomiasis was considered in certain African cultures as a sign of virility of the boy, and therefore desired and sought. A correlation between androgen impregnation and bladder cancer and the protective effect of estrogens has been demonstrated [7]. All these factors can explain the predominance of this disease in men.

Hematuria is the most common manifestation of bladder cancer [1, 6, 17]. It represents 76.41% of the reasons for consultation in our study, it was the revelation manifestation of bladder cancer for Nour in Egypt, Ochida in Nigeria, Diao in Senegal, Mapulanga in Zambia, Sharif in Libya, and Biluts in Ethiopia. It is an often abundant and persistent macroscopic hematuria. This hematuria may be followed or preceded by lower urinary tract symptoms such as pollakiuria, urinary urgency or acute urine retention [6, 17, 11].

Urothelial carcinoma is the predominant histological type worldwide 90-95% [1, 3, 6, 8].

However, squamous cell carcinoma of the bladder is particularly the dominant histological variety in sub-Saharan Africa [6, 8-10, 21].

Squamous cell carcinoma represents 79.51% of cases in our study followed by urothelial cancer 18.07% and adenocarcinoma 2.42%. This predominance is linked to the endemic schistosomiasis infection in our study populations. Several scientific works had indexed schistosomiasis as being the bed of squamous cell cancer of the bladder [6, 8-11]. This relationship is linked to the release of carcinogenic substances by the inflammatory reaction *Schistosoma haematobium* egg and bladder mucosa [10].

Ultrasound of the urinary tract is a frequent imaging examination in urology. In the case of hematuria, it allows exploration of the renal parenchyma. It is an operator-dependent examination which can suspect the presence of tumor in the bladder. With Doppler mode, it can avoid confusing with an intravesical clot [8, 20]. Eighty-one (81) patients had

had ultrasound of the urinary tract in our series it diagnose and locate tumor on the bladder wall.

All the tumors were at T3 level in minimum. Two patients had exophytic tumors following chirurgical acts which are either a cystostomy, or a cystostomy as part of a Trans-bladder prostatic adenomectomy (Figure 3).



Figure 3: Exophytic bladder tumor

Cystoscopy is the diagnostic tool for bladder tumor par excellence, it allows at the same time to perform a biopsy for histology [4, 6, 8, 10-13]. Several procedures have improved the sensitivity of cystoscopy for the detection of bladder tumours. Thus the intravesical instillation of hexyl aminolevulinate help to

detect tumors with blue light by the fluorescence emitted by tumor cells soaked in this substance [6, 8].

CT also make the diagnosis of bladder tumor and to assess its extension as shown here in Figure 4.

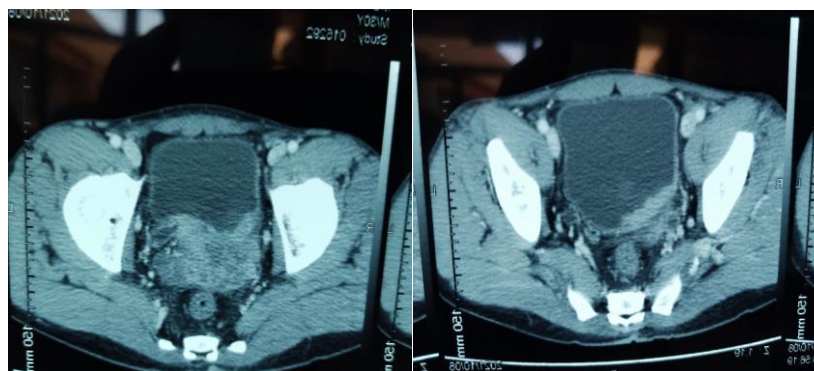


Figure 4: CT scan cross section at different levels showing bladder tumor

CONCLUSION

Bladder cancer is a tumor of the elderly, urothelial carcinoma is the most common histological variety in the world.

In Sub-Saharan Africa, squamous cell carcinoma is the dominant histological type due to schistosomiasis of which it is the long-term

complication. Cystoscopy is the gold standard for diagnosing bladder tumor.

Conflicts of interest: The authors declare no conflict of interest.

Ethical considerations: The hospital ethics committee validated this study.

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