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Urogenital Malignancies Seen in Radiotherapy Department of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto

Usman Malami Aliyu¹, Umar Muhammad Ango², Emmanuel Oyibo³, Ibrahim Arzika Mungadi³, Abubakar Sadiq³, Ahmed Rufai Isah⁴

¹Department of Radiotherapy and Oncology, Usmanu Danfodiyo University Teaching Hospital, Sokoto

²Department of Community Medicine, Usmanu Danfodiyo University Teaching Hospital, Sokoto

³Institute of Urology and Nephrology, Usmanu Danfodiyo University/ Teaching Hospital, Sokoto

⁴Department of Nuclear Medicine, Usmanu Danfodiyo University Teaching Hospital, Sokoto

Corresponding Author:

Usman Malami Aliyu,

Department of Radiotherapy and Oncology,
Usmanu Danfodiyo University Teaching Hospital, Sokoto
Email: usmangandii@gmail.com
Phone: +2348035043318

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Abstract

Background: The pervasive nature of urogenital malignancies (UGM) is evident in previous epidemiological studies despite the uniqueness in the pattern of distribution. This study seeks to describe the spectrum, clinicopathologic characteristics and treatment options of UGM in the department of radiotherapy and oncology UDUTH, Sokoto within the study period.

Materials and Methods: This was a 5-year retrospective review from 2nd January 2014 to 31st August 2019 of all the UGM referred to the radiotherapy and oncology Centre, UDUTH, Sokoto. The analyzed variables included the patient's age, sex, the organs involved, histopathological diagnosis and the treatment.

Results: Ninety-eight (98) UGM were referred to our facility, however only 90 had complete clinical record during the 5-year period under review; the male-to-female ratio was 7.3:1. The organs involved were the prostate (27; 27.5%), the bladder (49; 50.0%), the kidney (8; 8.2%), the testes (3; 3.0%), the penis (2; 2.0%) and the adrenal (1; 1.0%). The prostate histological variant was adenocarcinoma (100.0%). Squamous cell carcinomas constituted 67.3% of bladder cancers, whereas 62.5% of renal malignancies were renal cell carcinomas. The commonest form of treatment was the External beam radiotherapy (EBRT) constituting 34;34.3% however the aim of treatment was adjuvant in 52.9% and palliative in 47.1%.

Conclusion: This study shows the commonest UGM seen in UDUTH are prostate and bladder cancers. Furthermore, the study revealed a high rate of squamous cell carcinoma of the bladder in the region which correlate with schistosomiasis as the possible etiological agent as majority of them were farmers.

Keywords: Epidemiology, Genito-urinary malignancies, Radiotherapy.

Introduction

Genitourinary system comprises both urinary and genital organs, they are described together due to their proximity, they used common pathway and also share embryological origin (1). UGM is one of the leading public health problem globally (2) they constitute about 14% of global cancer burden (3). In United State of America (USA) alone, an annual morbidity of 225,000 and mortality of over 56,000 patients have recently been reported (4). The pattern of UGM in the Northwestern Nigeria has also been addressed (5, 6), however, there is paucity of this publication from our center.

Prostate cancer is now number one cancer in men (7) with increasing incidence and mortality in black men (8). Adenocarcinoma is the commonest histology and is linked to environmental risk factors, genetics, high testosterone levels and increasing age (9).

Bladder cancer is the second most common malignancy in urinary tract (10, 11). In USA, Italy and France Urothelial carcinoma constitute about 90% of bladder cancer (12) while in Eastern and Northern Europe, Africa and Asia Squamous cell carcinoma is reported to dominated these regions which is thought to be due to endemicity of chronic Schistosomal cystitis (13). Bladder cancer is the commonest male cancer in Sokoto State, Nigeria (14).

Renal cancers are the 3rd most common UGM, with male: female ratio of 2:1 and commonest histology in this tumor is renal cell carcinoma (80%) followed by transitional cell carcinoma (15)

Some part of Africa reported nephroblastoma to be the most common histology (16, 17). There is no clear association between kidney cancer and occupational exposure, but some occupational agents including oil refining and gasoline/diesel handling and polycyclic aromatic hydrocarbon pollutions reported to have aetiological relationship with renal cell cancers (18)

Testicular cancers are generally rare and are predominantly seen in young men with modal age of 30.5 years (19). While the incidence of this cancer is rising among white Caucasians, reports from black population in Africa including Nigeria is persistently lower (19-21).

Penile cancers are rare especially where circumcision is a tradition and in Nigeria it is a common practice amongst almost all the tribes (22). Elsewhere in Northern Nigeria it has been reported to be the list common UGM (15), in Europe and United States it accounts for 0.4–0.6% of all malignancies (23).

There are several reports of UGM from other part of the Northern Nigeria. However, none of these studies is from our center despite being the only Radio-oncology center serving 4 states of Sokoto, Zamfara, Kebbi and Niger and significant part of Niger Republic as such cases from our center would be more diverse and true representation of both epidemiology and clinicopathologic characteristics of UGM as against the other studies that more restricted to one state in region. Therefore, this study seeks to describe the spectrum, frequency, patient's age, sex distributions and treatment pattern of UGM in the department of radiotherapy and oncology UDUTH, Sokoto within the study period.

Materials and methods

A 5-year retrospective review of all cases of UGM referred to Radiotherapy and Oncology Centre of UDUTH, Sokoto between January, 2014 to August 2019. The center provides tertiary oncology services to all the neighboring states of Kano, Katsina, Zamfara, Kebbi, Niger and Kwara States. The data was extracted in to Microsoft excel spreadsheet (version 16.53, 2019) and statistical package software for social sciences (SPSS package version 27, 2020) was used for the analysis. The Descriptive statistics performed on the data generated include frequencies, mean and ranges. The analyzed variables included the patient's age, sex, the organs involved, histopathological diagnosis and the treatment.

Results

Ninety-eight (98) UGM were referred to our facility however only ninety had complete clinical record during the 5-year period under review; the male-to-female ratio was 7.3:1. The mean age was 53.63 ± 18.34 years, occurring most commonly in the 6th decade with majority of the patients being farmers (50.0%), the rest of the distribution of occupation among the patients is shown in figure 1. The organs involved (table 1) were the prostate (27; 27.5%), the bladder (49; 50.0%), the rest of the malignancies were low in number. The prostate histological variant was adenocarcinoma (100.0%). Squamous cell carcinomas constituted (30;61.23%) of bladder cancers out of this (18;36.73%) had associated schistosomal infection, whereas (15;30.61%) of the bladder cancers were urothelial carcinoma. (4;8.16%) of the 30.61% with urothelial carcinoma also had schistosomal infection. Renal cell carcinomas constituted 62.5% of renal malignancies. The detail of this distribution is shown in table 2. The commonest form of treatment was the External beam radiotherapy (EBRT) constituting 34;34.3% however the aim of treatment was adjuvant in 52.9% and palliative in 47.1%. Majority of the patients (58;58.6%) defaulted treatment, the remaining (52;35.6%) were attending their treatment. Forty-one (83.8%) bladder cancer patients received concurrent chemo-radiation therapy with gemcitabine and cisplatin on 3 weekly schedules.

Table 1. The distribution of genitourinary malignancies and gender

S/NO	UROGENITAL MALIGNANCY	Gender		FREQUENCY	PERCENTAGE
		M	F		
1.	Prostate cancer	27	0	27	30.0%
2.	Bladder cancer	40	9	49	54.5%
3.	Renal (Kidney) cancer	5	3	8	8.9%
4.	Testicular cancer	3	0	3	3.3%
5.	Penile cancer	2	0	2	2.2%
6.	Adrenal cancer	0	1	1	1.1%
7.	Total	77	13	90	100%

Discussion

A total of 98 patients were referred to radiotherapy department of UDUTH between the 2nd January 2014 to 31st August 2019, this was less than what other center reported in the southern part of the country(24)and in the other northern part(25). The male to female ratio was 7.3:1. Mean age at diagnosis was 53.63 ± 18.34 years, this is similar to the mean age reported in Ife and less than what other centers have reported in Nigeria (9, 26).

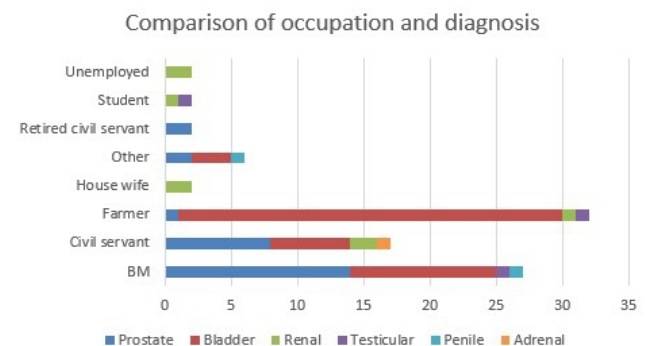


Figure 1. Showing the pattern of occupation among the patients

Our review revealed that the most-commonest UGM seen is bladder cancer (50%), this parallel reports from Kano (36%), Port Harcourt (6.5%) where bladder cancer was second most common UGM after prostate. This is most likely due to the fact that most of the predisposing factors of bladder cancer is common in this environment like excessive cigarette smoking, exposure to industrial compounds and burden of schistosomiasis. In terms of histology, squamous cell carcinoma dominated in our patients with 61.23%. of this figure 36.73% had schistosomal infection. Urothelial carcinoma was the second with 30.61% incidence, out of this 8.16% also had schistosomal infection. This shows the burden of schistosomal infection in our environment and its association with bladder cancer. Our data also showed that bladder cancer is commoner among farmers, this also could be attributed to the burden of schistosomal disease.

Table 2. showing distribution of UGM and its sub histological type.

Histology	Histological type	No. of Cases	Total
Prostate Cancer	Adenocarcinoma	27	27
Bladder cancer	Adenocarcinoma	4	49
	Squamous cell carcinoma	12	
	Squamous cell carcinoma & Schistosomi	18	
	Urothelial carcinoma	11	
Kidney cancer	Urothelial carcinoma & Schistosomiasis	4	8
	Adenocarcinoma	1	
	Renal cell carcinoma	5	
	Urothelial carcinoma	2	
Penile cancer	Squamous cell carcinoma	2	2
Testicular cancer	Embryological tumors	1	3
	Lydig cell tumors	1	
	Yolk sac tumors	1	
	Leiomyosarcoma	1	
Adrenal	Leiomyosarcoma	1	1

The incidence of prostate cancer in our review was 30%, this contradicts the report that prostate cancer is rare among black men (27). It also contradicts the global trends that prostate cancer is the number one cancer in men (7). This could also be underreporting because patients being managed at the urology section of the hospital is not taken in to account. Comprehensive study involving the entire hospital would further elaborate on this.

Malignant renal cancers are 3rd most commonest (8.9%) UGM, this is similar to that seen in Jos (28), Gombe (15) but differs the report from Zambia (29) where it was reported to be the 4th most common urological cancer.

Testicular, penile and adrenal tumors are rare in our environment both account for <3% of UGM seen in our center. This is in line with the previous studies across the globe (19, 22).

Conclusion

This study shows the commonest UGM seen in UDUTH are prostate and bladder cancers. Furthermore, the study revealed a high rate of squamous cell carcinoma of the bladder in the region which correlate with schistosomiasis as the possible etiological agent as majority of them were farmers.

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