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Research Article

Bladder Cancer Burden and Challenges of Management in Kano, North Western Nigeria

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Abstract

Introduction: Bladder cancer is the ninth most common cancer worldwide and second most common urologic cancer after prostate cancer. Worldwide, about ninety percent of bladder cancers are transitional cell cancers (TCC); others are squamous cell carcinoma (SCC) which comprises approximately 6-8%, and adenocarcinoma about 2%. However, in schistosomiasis endemic areas, SCC constitutes as high as 44-82% of bladder cancer. Schistosomiasis caused by S. hematobium is endemic in Africa, southern tips of Europe and parts of Japan.

Objectives: We aim to review the burden, pathology and clinical management of bladder cancers in Kano, North-Western Nigeria.

Methods: We retrospectively reviewed the records of all (98) patients seen and diagnosed to have bladder cancer and offered some form of intervention at Aminu Kano Teaching Hospital, Kano, from January 2011 to June 2016. Information obtained were risk factors, mode of presentation, histological type and intervention given and analysed by SPSS Version 16 and presented in tables and charts.

Results: There were a total of 98 patients seen with clinical diagnosis of bladder cancer. The mean age (±SD) was 51.4 ±13.9 years, with male to female ratio of 10:1. Ninety one (91%) presented as an emergency, 37 (84%) had identifiable risk factors. More than half of the patients (52%) couldn't have a representative tissue for histology because of advanced disease with necrotic tissues at presentation. About 44% has SCC while 29% was TCC.

Conclusion: Squamous cell carcinoma is still the predominant histological subtype of bladder cancer in our environment owing to endemicity of schistosomiasis and usually present in advanced stage.

Keywords: Bladder cancer; Schistosomiasis; Histological type

1. Introduction

Bladder cancer is one of the common malignancies worldwide responsible for significant morbidity and mortality and accounting for the huge cost on healthcare delivery system of many countries. It's the ninth most common cancer worldwide [1, 2] and second most common urologic malignancy after prostate cancer [3]. Urinary bladder cancer, which is mostly a urothelial carcinoma, is one of the most frequently diagnosed neoplasm, with nearly 550,000 new cases and 200,000 deaths estimated in 2018 worldwide [1, 2]. It is more common in the industrialized communities and among Caucasians. In Europe and North America, most patients are over 50 years old with peak age between 60-70 years and a male to female ratio of 3:1 [1].

In Africa the exact prevalence of bladder cancer is not known, however, a recent analysis of several reports across the continent put the pooled incidence of bladder cancer in Africa as 7.0 per 100 000 population in men and 1.8 per 100 000 in women. The incidence of bladder cancer was consistently higher in North Africa in both sexes. Incidence rates increased significantly among men from 5.6 (95% credible interval 4.2–7.2) in the 1990s to up to 8.5 per 100 000 in 2010 [2, 3].

Worldwide, about ninety percent of bladder cancers are transitional cell cancers (TCC), reflecting their origin from the transitional cells lining the bladder, others are squamous cell carcinoma (SCC) which comprises approximately 6-8%, and adenocarcinoma about 2% [4, 5]. However, in schistosomiasis endemic areas, SCC constitutes as high as 44-82% of bladder cancer [6, 7, 8]. In much of Africa, the predominant subtype continues to be SCC [2]. Squamous cell cancer poses challenge to urologist and surgeons in Africa as its presentation and approach to treatment is often different from those of TCC.

A 10-year retrospective review of the cancer registry in Kano, north-western Nigeria (2005-2014) revealed bladder cancer as the second most common male cancer (after prostate cancer) and the 11th most common female cancer [9]. Also a previous report of histopathological review of bladder cancer in Kano (1998 – 2001) showed SCC was the predominant histological variety (53%), others were TCC - 35% and adenocarcinoma- 4%. The mean age of incidence was 48.8years and male to female ratio was 5.2:1 [10]. However, an update of histopathological review from the same centre (2001-2015) showed a switch of the most common histological variety of bladder cancer to urothelial cancer found in 49.6%; others were SCC – 44.3% and sarcomas -5%. The mean age and sex preponderance remained similar (51.2years and M: F- 7.6:1) [11].

The causal relationship between urinary schistosomiasis and bladder cancer was first reported by Fergusson [6].

There is now compelling body of evidence on the contribution of chronic urinary bladder schistosomiasis to the aetiopathogenesis of bladder cancer. Non-bilharzial cases are usually associated with chronic bladder irritations by vesical stones, chronic indwelling catheters or in bladder diverticula [6,12,13]. Different aetiopathogenic mechanisms have been suggested for bladder cancer; in schistosomiasis-induced bladder cancer no direct carcinogenic product from the parasite has been isolated. Current evidence suggests enhanced inflammatory cells and bacterial nitrosation of endogenous nitrite to carcinogenic N- nitroso compounds in schistosoma infected bladder [13]. In contrast, several compounds found in tobacco, occupational exposure to aromatic amines or polycyclic aromatic hydrocarbons in petroleum products, agricultural chemicals and industrial compounds (rubber/dye) are linked to development of TCC [4]. Diagnosis of TCC is made from urinary cytology, urinary biomarkers and urethrocystoscopy and biopsy while in SCC the diagnosis is largely made from urethrocystoscopy and biopsy.

Transurethral resection, partial cystectomy, radiation therapy and chemotherapy are the most common treatment modalities for TCC; however, these are not effective in the treatment of SCC, in which radical cystectomy and urinary diversion is the treatment of choice in selected cases. Importantly, the prognosis for bladder cancer patients remained largely unimproved, during the last few decades, in spite of considerable advances in diagnostic technologies, as well as treatment strategies. In general, SCC has a poorer prognosis [14].

2. Aim

We aim to review the burden of bladder cancer in our centre, possible risk factors, clinical presentation, treatment options offered, our limitations and to offer recommendations.

3. Methodology

We retrospectively reviewed the records of all the (98) patients seen and diagnosed to have bladder cancer and who were offered some treatment at Aminu Kano Teaching Hospital, Kano, from January 2011 to June 2016.

4. Data Collection

Data was retrieved from medical records. The charts of all patients admitted to the hospital with the clinical diagnosis of bladder cancer were reviewed. The demographic data such as age, gender, occupation and address were recorded. Others were risk factors for bladder cancer, clinical presentation, investigations done, treatment given and patient outcome were all noted and the database was rescreened and recorded.

5. Data Analysis

Patients bio-data information were recorded using a simple proforma and was entered in to Microsoft excel spread sheet, then exported in to SPSS Version 16 for windows and analysed (by University of Bristol Information Services, UK, October, 2008). Qualitative variables were summarized using frequency and percentage while quantitative variables were summarized using mean and standard deviation or median range and presented as tables and charts.

6. Results

Over the period covered by the study, a total of 98 patients with clinical diagnosis of bladder cancers were seen at the facility. Their age ranges between 21-90years with mean age of 51.4$\pm$13.9. Other details are as shown below and Majority of the patients were males as shown in Figure 1.

Age Group(years)	Frequency	Percent (%)
21 – 30	4	4.1
31 – 40	9	9.2
41 – 50	19	19.4
51 – 60	23	23.5
61 – 70	28	28.5
71 – 80	14	14.3
81 - 90	1	1.0
TOTAL	**98**	**100**

Table 1: Age distribution of patients.

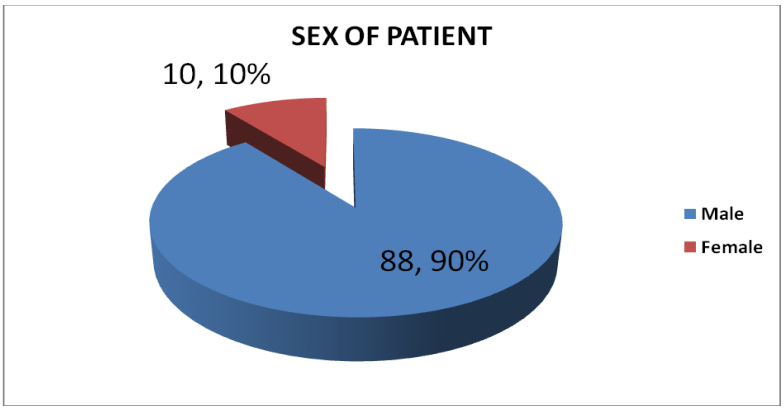

Figure 1: Sex distribution of patient. M: F = 9:1.

The patients predominantly presented in emergency situations warranting admission and resuscitative measures and only few presented with mild stable diseases as shown in Table 2.

Variables	Frequency	Percent
Emergency	89	91
Elective	9	9
Total	98	100

Table 2: Distributions of mode of presentation.

Similarly, risk factors for bladder cancer were established in up to 86% of the patients and these include childhood schistosomiasis, cigarette smoking and exposure to organic/industrial compounds. Majority had only one risk factor with a small percentage found to have more than one. Table 3 showed the distribution of the risk factors.

Risk Factor	**Frequency**	**percent**
None	14	14.3
1	40	40.8
2	6	6.1
3	7	7.2
1+2	10	10.2
1+3	9	9.2
2+3	7	7.1
1+2+3	5	5.1
Total	**98**	**100**

KEY: 1-Childhood schistosomiasis; 2-Cigarette smoking; 3-Exposure to organic and industrial compounds

Table 3: Distribution of risk factors for Bladder Cancer.

The patients had several investigations in the course of their treatment, including urethrocystoscopy with biopsy for histological diagnosis however we were only able to retrieve the urethrocystoscopic finding of 62 patients and histology of 41 patients. The summary of urethrocystoscopic findings are shown in Table 4. A common cystoscopic finding in our patients with bladder tumour is shown in Figure 2. The histological diagnosis in the 41 patients is shown in Figure 3.

Bladder tumour sites and number	**Frequency**	**percent**
Occupying most of bladder lumen	32	51.6
Occupying trigone and at least 2 walls	15	24.2
Involving bladder neck and urethra	10	16.1
Single focal tumour	3	4.9
Multi focal tumour	2	3.2
Total	62	100

Table 4: Urethrocystoscopic Findings among the patients.

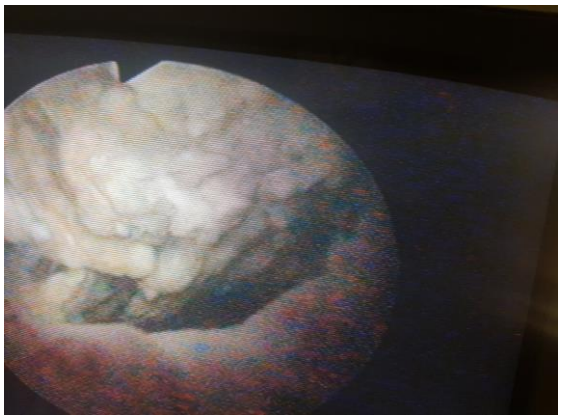

Figure 2: Cystoscopy showing bladder tumour occupying most of the lumen covered by sloughs.

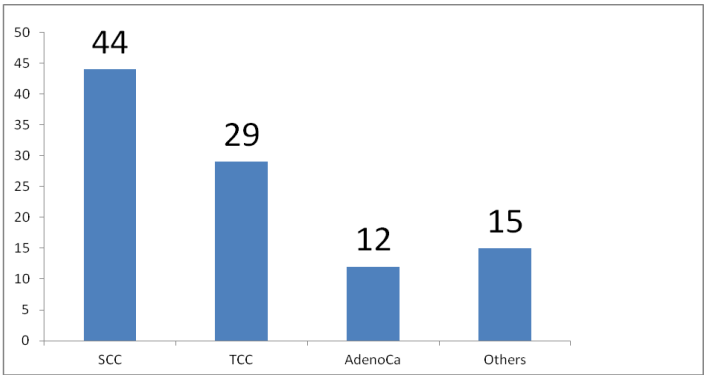

Figure 3: Shows distribution of histology of bladder cancer.

Majority of the patients had only palliative resuscitative measures as they had locally advanced/metastatic diseases at presentation while only 13 patients (13.3%) had radical cystectomy with urinary diversion (cutaneous ureterostomy or orthotopic ileoneocystoplasty). The palliative resuscitative measures include blood transfusion, continous bladder irrigation, haemodialysis and percutaneous nephrostomy. This is summarized Table 5. A typical ileoneocystoplasty after radical cystectomy is shown in Figure 3-5,

Intervention	**Frequency**	**Percent**
Palliative resuscitative measures	85	86.7
Cystectomy +cutaneous ureterostomy	4	4.1
Cystectomy + orthotopic ileoneocystoplasty	9	9.2
Total	**98**	**100**

Table 5: Interventions for the patients with Bladder Cancer.

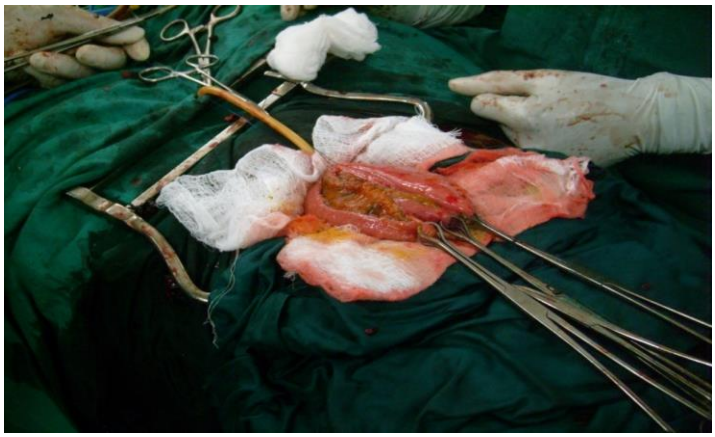

Figure 4: Ileal detubularization.

Figure 5: Wall reconstruction of neobladder.

Figure 3: Fully reconstructed neobladder.

Out of the 13 patients who had cystectomy, 4 (30.7%) developed post operative complications (mainly tumour recurrence) of which 3 (23.7%) died within 2 years of follow up.

7. Discussion

The patients' age ranges between 21-90years with mean age of 51± 13.9 years [Table 1]. The highest incidence was among patients aged 61-70years, though about 30% of the patients are below the age of 51years.These findings are consistent with those reported in other studies [5, 11]. Relatively younger age group in our environment may be related to the fact that, most of the diagnosed tumours are SCC which presents at an earlier age, more aggressive and advanced at the time of diagnosis [12]. The male to female ratio was found to be 9:1 (Figure 1), this is similar to the findings by Mungadi et al. in Sokoto, Nigeria who found a ratio of 11.1:1 but higher than what was obtained in Ghana [14], and in Ibadan [15]. This could be explained by the fact that men engaged more in activities predisposing them to developing schistosomiasis (such as swimming and irrigation farming) hence more at risk in developing SCC.

Most of our patients (91%) presented as emergency with either Anemia, Shock, Clot retention, Uraemia or Urosepsis (Table 2) for which they required resuscitations with fluids, blood transfusion, antibiotics, dialysis or percutaneous kidney punctures similar to reports from Egypt [14]. The emergency presentation suggest advanced disease which could be attributed to the prevalent SCC and poor health seeking behaviour of our people who are mainly farmers from rural areas exposed to bilharzia and Agricultural chemicals with limited access to healthcare facilities.

The most common risk factor identified in our study is poorly treated childhood terminal haematuria secondary to schistosomiasis. Others were cigarette smoking and exposure to industrial compounds (Table 3). This is expected as Kano is in a region endemic of schistosomiasis. This also supports the finding of a predominantly SCC in our study (Figure 3) as a direct link has been documented with schistosomiasis by metaplasia and dysplasia [12, 13]. However we are limited by lack of resources to evaluate for the presence of other risk factors including genetic predisposition, chemical carcinogens, reactive oxygen species and other organic compounds as reported by Gul Lone and colleagues [17]. Most common cystoscopic finding is that of usually huge tumours, filling the whole of the bladder lumen with a lot of necrotic tissues in which several attempts at biopsies may only reveal a non representative necrotic tissues hence requiring repeated procedures (Table 4, Figure 2).

Squamous cell carcinoma still remain the predominant histological variety in our environment (Figure 3) in contrast to a change to TCC as predominant histological variety seen for example in Egypt that previously had predominantly SCC [4]. This difference is probably due to the fact that schistosomiasis is still endemic in our environment despite effort at eradicating it. Radical cystectomy has been describe as the goal standard for the treatment of bladder cancer, however only 13.3% of our patients were fit for and had the procedure (Table 5). This is because majority of our patients (86.7%) presented with a locally advanced or metastatic disease.

Among the 13 patients who had cystectomy, complications rate was 30.7% and mortality rate was 23.7%. Cancer related mortality of 29% was reported by Mokhtar et al. [18], which is slightly higher than our report but predicted 50% mortality in 2 years due to development of metastasis. Wayan et al. [19] and Zhu et al. [19], related early death

with under estimation of tumour stage, aggressive characteristics of bladder cancer and peri-operative complications.

8. Limitations

1. It is a retrospective study, with some missing data, may not reflect the exact number diagnosed over the period of study, but rather those with available records.
2. Advanced nature of the disease, limited our ability to get correct biopsies on cystoscopy and unable to make histological diagnosis of those cases.

9. Recommendations

1. Community based studies to get the exact prevalence.
2. More effort in prevention of schistosomiasis at all levels
3. Encourage patient to present with early disease through health education.
4. Screening to detect early disease and surveillance for people with history of childhood haematuria.
5. Better facilities for cystoscopy and biopsy and other tumour markers

Conflict of Interest

None declared.

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