

# Bladder cancer in Kano - A histopathological review

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## Summary

Malignant tumours of the bladder have been observed to be quite common in Kano but there has been no formal study. This four-year (1998 - 2001) retrospective review sought to document the pattern of these neoplasms. Vesical malignancies constituted 6.4% of all cancers in Kano with squamous (53%) and transitional (35%) carcinomas as the most common histological types. Males outnumbered females more than five times (M : F = 5.2 : 1).

Cancer of the bladder was most prevalent in the 5th and 6th decades with a mean age of 48.8 years.

In general our findings are similar to bladder cancer in other schistosomal endemic regions of Africa.

**Keywords:** Bladder cancer, Schistosomiasis, Nigeria.

## Résumé

On a remarqué que des tumeurs malignes à partir de la vessie est vraiment fréquent à Kano mais il n'y avait pas d'étude formelle. Ce quatre ans, (1998 - 2001 un bilan rétrospectif essaie de documenter la tendance de ces néoplasmes. Des malignités vésicales ont constitué 6,4% de tous les cas de cancer à Kano avec le squame (53%) et transitionnel (35%) carcinome avec les types histologique le plus fréquent. Les hommes sont plus nombreux que les femmes de plus de cinq fois (M : F = 5,2 : 1). Le cancer de la vésicule était le plus répandu au cinquième et sixième décennie avec l'âge moyen de 48,8 ans. Dans l'ensemble, nos résultats sont pareils à cancer de la vésicule dans les autres régions schistôses endémique de l'Afrique.

## Introduction

Worldwide, bladder cancer is the sixth most common malignancy<sup>1</sup> and the fourth most common among American males.<sup>2</sup> In Africa the prevalence of this neoplasm shows marked variation with high incidence in Zambia,<sup>3</sup> Egypt<sup>4</sup> and Mozambique,<sup>5</sup> and low incidence in South Africa<sup>6,7</sup> and Kenya.<sup>8</sup> Here in Kano, a recent unpublished survey by the Kano cancer registry found bladder tumours to be the second most common visceral malignancy in males after prostatic cancer.<sup>9</sup>

Certain well known aetiological factors have been associated with bladder cancer. These include urbanization with industrial/occupational exposure to chemical carcinogens, smoking and schistosomiasis.<sup>10</sup> Kano State and the neighbouring Jigawa where the biopsies for this study emanate, are largely agrarian and rely on several small irrigation dams for much of their agricultural output. Bladder schistosomiasis is endemic in the settlements around these dams notably in Gumel, Hadejia, Wudil and Madobi local government areas. In addition, Kano metropolis is home to a number of industries among which are textiles and leather/hides & skin. These industries are well known to employ the use of carcinogenic chemicals associated with vesical malignancy.<sup>11,12</sup>

Published works on bladder cancer in Northern Nigeria are very scanty and are mainly from the middle belt.<sup>13,14</sup> So far there has been none from here in Kano. This paper endeavours to document the pattern of bladder cancer in Kano and its environs as well as attempts to explain the high incidence.

## Material and Methods

This is a retrospective study of all histologically diagnosed bladder tumours over a four-year period from January 1998 to December 2001. Data were obtained from histopathology records of Aminu Kano Teaching Hospital (AKTH) and Murtala Mohammed spe-

cialist hospital (MMSH). MMSH and AKTH are the two major tertiary health institutions offering histology services to Kano and Jigawa states.

Histology slides on all cases were reviewed and new haematoxylin and eosin sections were made when old slides could not be retrieved. Special stains were employed where necessary. Classification and grading were based on WHO histological typing of tumours.<sup>15</sup>

Histopathology and haematology records of all malignancies during the study period were also reviewed to determine the relative frequency of bladder cancer.

## Results

Eighty nine excision and cystoscopic bladder biopsies were received at the histopathology laboratories of AKTH and MMSH during the study period. Over three quarters (67 cases) of the biopsies were from the schistosomiasis endemic areas of Kano and Jigawa States.

Table 1 shows the different histological lesions in the bladder biopsy specimens. Seventy two were from males and 17 from females. Bladder malignancies comprised 57.3% (51 cases) of all bladder biopsies and 6.4% of all histologically diagnosed cancers in Kano with marked male preponderance (M : F = 5.2 : 1). Schistosomiasis was diagnosed in 19 (21.3%) of the biopsies and ova were also present in 6 (12%) of the cancers. Eighteen (20.2%) specimens had non-specific chronic inflammation as no ova were found. There was only one (1.1%) benign tumour, a leiomyoma.

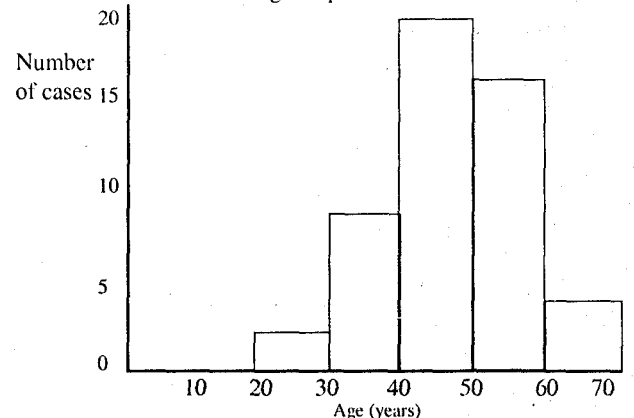
**Table 1** Bladder biopsies in Kano

Histological diagnosis	Number of cases	%	Males	Females
Malignant tumours	51	57.3	43	8
Schistosomiasis	19	21.3	10	4
Chronic inflammation	18	20.3	8	5
Benign tumours	1	1.1	1	-
<b>Total</b>	<b>89</b>	<b>100</b>	<b>72</b>	<b>17</b>

**Table 2** Histological types of Bladder cancer

Histological diagnosis	Number of cases	%
Squamous carcinoma	27	53
Transitional cell carcinoma	18	35
Adenocarcinoma	2	4
Leiomyosarcoma	1	2
Anaplastic carcinoma	3	8
<b>Total</b>	<b>51</b>	<b>100</b>

Figure 1 is a histogram showing the age distribution of bladder cancer in Kano with the highest prevalence in the 5th and 6th de-



**Fig. 1** Age distribution of bladder cancer in Kano

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ades. The mean age in this review was 48.8 years.

Table 2 shows the various histological types of bladder cancer. Squamous carcinoma was by far the most common accounting for just over half (53%) of all cases. Twelve (44%) were moderately differentiated, nine poorly differentiated and six well differentiated. Transitional cell carcinoma comprised 35.3% (18 cases) of bladder malignancies, two thirds (12) of which were grade III tumours. There were 2 and 4 cases of grade I and II tumours respectively. Other histological types include three anaplastic carcinomas, two adenocarcinomas and a leiomyosarcoma.

## Discussion

In this study bladder cancer constituted 6.4% of all cancers in Kano. This is much higher than 0.92% in Kenya<sup>8</sup>, 1.25% in Ibadan,<sup>16</sup> 3.45% in Jos,<sup>14</sup> 3.1% in Zaira<sup>17</sup> and 4.6% in England/Wales.<sup>18</sup> The preponderance of cases in this series from schistosomiasis endemic areas largely explains the high incidence. This is consistent with the observation by Lucas that schistosomiasis endemic areas tend to have high prevalence of bladder cancer<sup>19</sup>. Numerous reports have linked vesical cancer to *Haematobium* schistosomiasis.<sup>4,5,19,20,21</sup> *Schistosoma* ova is known to elaborate  $\beta$ -glucuronidase which can deconjugate and activate carcinogenic metabolites in urine.<sup>21</sup> Also, the chronic bladder irritation/inflammation evoked by schistosomiasis induces squamous metaplasia and dysplasia which may become neoplastic<sup>10</sup>

However, only 12% of tumours in this study had schistosoma ova on histology section compared to 9% in Jos,<sup>14</sup> 11% in Ibadan<sup>16</sup> and 34% in Zambia, a schistosomiasis endemic zone.<sup>3</sup> Several reasons can be proffered for this low ova yield. Many of these patients particularly from rural areas first present with haematuria at the poorly staffed and poorly equipped local health centres or patent medicine shops where they are treated for *tsargiya* (schistosomiasis). Only when symptoms persist or worsen are they referred to the better staffed hospitals where cancer is diagnosed. Unrepresentative sampling in some of the cystoscopic biopsies may also partly explain the low ova yield. Furthermore schistosomiasis associated bladder cancer usually occurs in longstanding cases in which ova may have been obliterated by reparative fibrosis.<sup>22</sup>

In addition, non-schistosomal aetiological factors may be involved. This is particularly likely as squamous carcinoma, the histological type usually associated with schistosomiasis comprises just over half (53%) of the cases in this review in contrast to about 70% in other schistosomiasis endemic zones.<sup>3,4,5,10,19</sup>

Bladder cancer has also been linked to urbanization with occupational exposure industrial carcinogens.<sup>10,11</sup> In Kano, textiles and leather/hides and skin are among the major industries. These industries are known to employ the use of aniline dyes that contain chemical carcinogens such as  $\beta$ -naphthylamine<sup>2,10,11,22</sup> which is one of the most potent human carcinogens.<sup>21</sup> None of these high risk industries carcinogens in Kano could not be properly evaluated as detailed social and occupational history was beyond the scope of this histopathological review.

Similarly, the role of smoking, another well documented risk factor<sup>10,22</sup> could not be assessed. In view of our relatively low per capita cigarette consumption in Nigeria, it is unlikely that this is an important risk factor here in Kano. This is supported by the low incidence of other tobacco related cancers in the country notably bronchogenic carcinoma.<sup>9,17,23</sup> Bladder cancer was more than five times more common in males than in females in Kano. Other studies also document male preponderance with M:F ratios of 3.8:1 in the UK<sup>18</sup>, 3:1 in the USA<sup>10</sup>, 2-3:1 in Ibadan<sup>16</sup> and 2:1 in Jos.<sup>14</sup> The marked male predilection in Kano can be attributed to the fact that men constitute the bulk of farmers and fishermen around the schistosomiasis infested dams as well as most of the workers in the high risk industries.

In the England and Wales bladder cancer peaks in the seventh decade<sup>18</sup> while the median age in the USA is 65 years.<sup>2</sup> The peak age group in this review was in the fifth decade followed closely by the sixth with mean age of 48.8 years. This is consistent with the well documented observation that bladder cancer in schistosomiasis endemic areas occurs at relatively younger age group.<sup>3,4,5,22</sup> In Zambia for instance, more than half of the patients with bladder malignancies were below 50 years.<sup>3</sup> In Ibadan where the endemicity of schistosomiasis has been significantly reduced, the mean age in a recent study was 60 years and transitional cell carcinoma the most common histological type.<sup>16</sup>

Schistosomiasis in endemic localities is usually acquired in the first and second decades<sup>22</sup> causing chronic bladder irritation/inflammation that may ultimately lead to cancer decades later.<sup>10</sup> The resulting squamous carcinoma has poor prognosis as 70% die within one year.<sup>10</sup> This together with the preponderance of grade III lesions in our transitional carcinoma patients does not augur well for long term prognosis.

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