

## Urological Tumours in Jos University Teaching Hospital, Jos, Nigeria (A Hospital-based Histopathological Study)

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### ABSTRACT

This is a hospital based retrospective histopathological study of urological tumours in 10 years. Specimens consisted of all surgical excisions, trucut and fine needle biopsies of kidney, prostate, urinary bladder, testis and penis. Urological tumours accounted for 11.45% of all malignant tumours during the period of study. Prostate cancer accounted for 44.1%, urinary bladder 31.7%, kidney 17.3%, testis 5.8% and penis 1%. The study also showed that urinary bladder tumour and malignant tumours of the kidney were found predominantly in males in the ratio of 3:1. There was a high rate of prostate cancer, changing pattern of urinary bladder cancer from squamous cell carcinoma to transitional cell carcinoma. This finding is in contrast to what has been reported in some African countries. Urological tumours appear common in our surgical specimens and constitute significant proportion of malignancies in Jos University Teaching Hospital. This study forms the bases for further evaluation and epidemiological studies (*Nig J Surg Res 2000; 2:108-113*)

*KEY WORDS: Urological tumours, prostate, urinary bladder, changing pattern*

### Introduction

The incidences of all cancers vary widely between regions, and even in the same country among different ethnic groups and a sound knowledge of its prevalence both at national and international levels is important.

Urological tumours are increasingly becoming common in the tropics.<sup>2-4</sup> Cancer of the prostate is one of the leading cancer in men in USA, and also African-American men. Prostate carcinoma is common in Africans and those of African origin.<sup>5,6</sup> In the past, reports from this part of the world suggested that carcinoma of the prostate was rare in the African<sup>7</sup>, but subsequent reports from West Africa and other parts of Africa have showed that carcinoma of the prostate is the commonest genitourinary malignancy.<sup>5,8-10</sup> Osegbe<sup>9</sup> reported recently that prostatic cancer was not only common in the

African black but is as common as it is in their American counterparts. Cancer of the prostate is a disease of the elderly over the age of 50 years. In America and Europe, cancer of the prostate is more prevalent among blacks and blacks have higher age-adjusted death rate than the white population.<sup>5,11</sup> The disease also appears in younger age group in Africans when compared to Caucasians and Japanese. Like many other forms of cancer, the exact cause of prostate cancer is not known. Risk factors associated with its development include, age, family history, socio-economic status, occupation, sexual activity and hormonal levels (androgens).<sup>5,10</sup>

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Carcinoma of the urinary bladder is common in Africa.<sup>12-16</sup> Squamous cell carcinoma has been reported to be the commonest histological type in East and North Africa.<sup>15,16</sup> In the past, reports from Ibadan and other centres in Nigeria showed that squamous cell carcinoma was the predominant histological type. However, recent reports from Ibadan,<sup>12</sup> Enugu<sup>13</sup> and Jos<sup>14</sup> showed a changing trend; transitional cell carcinoma of the urinary bladder being the predominant histological type. This changing trend has been attributed to changes in socio-economic status and increasing industrialisation witnessed in Nigeria, exposing the population to more carcinogenic agents. Also implicated is a decreasing incident and more effective and prompt treatment for schistosomiasis. However, squamous cell carcinoma is commonly seen in areas of schistosomal endemicity. Disorders of tryptophan metabolism are believed to release carcinogenic substances that promote carcinoma of the urinary bladder<sup>11,15,16</sup>

Renal cell carcinoma is the commonest malignant tumour of the kidney in adults world wide<sup>2,11</sup> and has been described in older children where it constituted 1-2% of all malignant tumours of kidney in childhood.<sup>17</sup> Nephroblastoma is the commonest malignant tumour of the kidney in children, and in some centres in Africa it is the commonest childhood tumour.

Testicular cancers are rare in blacks and in mixed races. Germ cell tumours account for 90-95% of all testicular malignancies in north America and Europe.<sup>4,18</sup> Testicular cancer is associated with maldescent of the testis in 4-11% of cases. The definite aetiology of testicular cancer remains unknown, although, age, genetic factors and repeated infection have been implicated. Penile cancer has a worldwide distribution with low incidence among Muslims and infrequent occurrence among Jews due to religious circumcision.<sup>3,4</sup>

The Jos University Teaching Hospital is located in the city of Jos and serves as a referral centre for the neighbouring states. The hospital maintains a cancer registry in the department of pathology. The aim of this report

is to document the histopathological pattern of urological tumours in this hospital.

## Material and Methods

The material consisted of surgical, trucut and the needle biopsies of prostate, urinary bladder, kidneys, testis and penis received at the histopathology laboratory from inpatients and referrals from other government and private health centres between January 1990 and December 1999 inclusive. These specimens were sent to the histopathology laboratory in 10% formaline. The tissue was processed in paraffin and histological sections were stained with standard haematoxyline and eosin stains. Special stains such as periodic acid Schiff and mucuramine were employed to demonstrate the presence of muin in some malignancies in the testis and urinary bladder. The information extracted, which accompanied each specimen included age, site of tumour, clinical presentation and laboratory results. Tumours of various organs were then classified accordingly.<sup>21</sup> In the same period, a total of 2,673 malignant tumours were confirmed histologically in this department.

## Results

There were 306 primary urological tumours, accounting for 11.45% of all malignant tumours. Table 1 shows the distribution of the urological cancers. Prostate cancer was the commonest 44.1%, followed by urinary bladder 31.7%, kidney 17.3%, testis 5.85 and penis 1.0%. Table 2 shows the histological types of various types of urological tumours. The overall peak age incidence at presentation was 50-60 years. All prostate cancers were adenocarcinoma and transitional carcinoma was the commonest bladder malignancy with peak age incidence of 30-40 years. The peak age incidence at presentation for nephroblastoma was 3-4 years and 30-50 years for renal cell carcinoma. Seminoma was the commonest (66.7%)

Table 1: Distribution of Urological Tumours in Jos University Teaching Hospital

Organ	No. (%)	Sex		Peak age (yrs)
		M	F	
Prostate	135 (44.1)	135	-	50 – 69
Urinary bladder	97 (31.7)	69	28	30 - 60
Kidney	53 (17.3)	34	19	30 - 45
Testis	18 (5.8)	18	-	11 - 30
Penis	3 (1.0)	1	-	65 - 71

Table 2: Histological Type of Urological Tumours

Organ	Histological type	No.
Prostate	Adenocarcinoma	135(100)
Urinary bladder	Transitional cell	49 (50..5)
	Squamous cell	42 (43.3)
	Adenocarcinoma	3 (3.0)
	Spindle cell	3 (3.0)
Kidney	Nephroblastoma	30 (56.0)
	Renal cell carcinoma	20 (37.7)
	Leiomyosarcoma	2 (3.7)
	Burkitt's lymphoma	1 (1.8)
Testis	Seminoma	12 (66.7)
	Yolk sac	6 (33.3)
Penis	Squamous cell	3 (100)

- Figures in parenthesis are percentages of histological type in individual organs

testicular tumour with a peak age incidence of 18-26 years and 10-15 years for yolk-sac tumour. Three cases of squamous cell carcinoma of the penis were seen at ages 65, 68 and 71 years respectively.

Table 3 shows the commonest presentation features in urological tumours. Prostate; poor urinary stream and increased frequency. Urinary bladder; haematuria, wasting and anaemia. Kidney; intra-abdominal mass, hypertension and anaemia. Testicular tumours presented as masses and penis as

ulcerating fungating masses.

### Discussion

Prostate carcinoma was found to be the commonest urological tumour in this hospital, accounting for 44.1% of urological tumours. Cancer of prostate is the commonest urological malignancy worldwide with varying incidence.<sup>4,5,6</sup> It is a disease of men over 50 years of age and the incidence increases with age.<sup>5</sup>

Table 3: Clinical Presentation of Urological Tumours

Presentation	No. (%)
Prostate (n=135)	
Poor urine stream	100 (80.0)
Frequency	90 (66.7)
Nocturia	100 (80.0)
Low back pain	105 (87.7)
Urinary bladder (n=97)	
Haematuria	97 (100)
Wasting	35 (36.1)
Anaemia	20 (20.6)
Pelvic mass	15 (15.5)
Kidney (n=53)	
Intraabdominal mass	53 (100)
Anaemia	40 (75.5)
Wasting	20 (37.6)
Hypertension	10 (18.8)
Testis (n=18)	
Testicular mass	18 (100)
Penis (n=3)	
Fungating mass	3 (100)

The peak age incidence in this study was 50-60 years. This is similar to what obtains in Lagos, Zimbabwe and Nairobi.<sup>10</sup> The aetiology of prostate cancer is not known, factors incriminated include, family history, increased androgen levels, socio-economic status and sexual behaviour.<sup>4, 5, 10</sup> The prognosis is largely dependent on the stage and grade of tumour.

Carcinoma of the urinary bladder was the second commonest urological tumour encountered in this study and accounted for 31.6%. This is consistent with what is seen in other parts of Nigeria and African,<sup>12, 13, 14</sup> except in Zambia where it is the commonest urological malignancy.<sup>2</sup> The present report shows that transitional cell carcinoma was the commonest histological type and followed by squamous cell carcinoma. This is in contrast to reports from other parts of Africa where squamous cell carcinoma is reported to be the dominant histological type.<sup>5, 16</sup> However, reports from Ibadan<sup>12</sup> and Enugu<sup>13</sup> show similar findings. A

previous report from this centre also showed increasing frequency of transitional cell carcinoma.<sup>14</sup> Increasing rate of transitional cell carcinoma may be attributed to increasing urbanisation and industrialisation in Nigeria, exposing the population to new carcinogenic agents. Improved water supply, better diagnosis and treatment for schistosomiasis may also account for a decreasing incidence of squamous cell carcinoma. However squamous cell carcinoma is still higher than what is obtained in industrialised areas.<sup>12-14</sup> The aetiopathogenesis of urinary bladder cancer is believed to be due to excessive synthesis or local conversion of tryptophan metabolites to potent carcinogenic products. This has been reported to occur in schistosomiasis and schistosomiasis associated with carcinoma and also in non-schistosomal urinary bladder carcinoma.<sup>15, 16</sup>

Nephroblastoma was the commonest malignant tumour of the kidney, accounting for 56.6% of renal tumours. Nephroblastoma is the

commonest renal tumour in childhood.<sup>17</sup> Records of cancer in the department pathology (JUTH) shows that it is the third commonest childhood tumour in this centre, with peak incidence during the third to fourth year of life. Histologically, majority were triphasic consisting of primitive tubule, glomeruloid bodies and sarcomatoid stroma.<sup>5,11</sup> Renal cell carcinoma was the second common tumours of kidney in the present report. However, it is the commonest malignancy in kidney in both age groups worldwide.<sup>5</sup> This observed differences might be due to sample size and fewer referral cases, and absence of radiotherapy facilities in this centre.

The aetiology of renal cell carcinoma is not known but it is associated with tobacco smoking, hereditary conditions and chromosomal abnormalities. Translocation 3:8 and 3:11, and tumour suppressor gene, in the short arm 3 (3p25-26) has also been observed.<sup>5,11</sup>

Three cases (1.0%) of cancer of the penis were seen and all were squamous cell carcinoma and presented as ulcerating and fungating masses. This cancer is common in south India, and certain parts of North Africa.<sup>3,4,19,20</sup> All the three cases were in the seventh and eighty decades, which is similar to other reports from parts of Africa.<sup>3,4,19,20</sup> Cancer of the penis is associated with previous penile scar, sexually transmitted human papilloma virus (HPV) and uncircumcised penis.<sup>19,20</sup> Testicular tumour is relatively rare in our environment. Seminoma was the commonest and less commonly yolk sac tumours. It is said to be rare in black and the condition is associated with maldescent of the testis. Germ cell tumours are now curable conditions and prognosis is good even in the presence of metastasis.<sup>3,4,18</sup>

The high incidence of prostatic cancers, which were largely incidental cancers, has heightened our suspicion and increased our rate of trucut biopsy. It is therefore suggest that routine screening using prostate specific antigens be done Nigerians males above the age of 50 years.

### Acknowledgement

We are grateful to our colleagues, Drs J.O. Obafunwa and E. J.C. Nwana for their contributions and Mr. Monday Akwu Uchola for secretarial work.

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