

## PATTERN OF CANCER IN MAIDUGURI, NIGERIA: TUMOURS IN ADULTS

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### ABSTRACT

**Objective:** To determine the general pattern of cancer  
in Maiduguri, Nigeria.

**Methods:** This was a retrospective study. All cancer  
cases in our diagnosis register between 1989 and 2003  
were retrieved and studied. The tumours were classified  
according to the Armed Forces Institute of Pathologists  
(AFIP) of America as modified from the World Health  
Organisation (WHO). The frequencies of the tumours  
were then analysed and presented in tables.

**Results:** During the study period (January 1989 to  
December 2003), there were a total of 13,874 biopsies  
out of which cancer constituted 2341 cases (16.9%).  
The commonest cancer in the study was carcinoma of  
the uterine cervix (19.5%) followed by cancer of the  
female breast (12.5%). Gastro-intestinal, skin and soft  
tissue cancers were commoner than prostatic cancer  
(6.2%) in general contributing 10.5%, 9.1% and 6.3%  
respectively. However, prostatic cancer was the  
commonest cancer amongst males. Cancers of the  
urinary tract and the head and neck accounted for 5.5%  
and 4.5% and ranked 7<sup>th</sup> and 8<sup>th</sup> respectively.

**Conclusion:** Our study revealed that cancer was  
common in our center and the two most common  
cancers were cervical and breast cancer respectively.  
Cancer of the uterine cervix was commoner than breast  
cancer unlike other parts of Nigeria and Africa in  
general. Therefore there is the urgent need to set up  
oncology unit to promote prevention and control of  
cancer.

**Key words:** Cancer pattern, carcinoma of  
cervix, breast, soft tissues, prostate, Maiduguri,  
Nigeria

### INTRODUCTION

The emergence of cancer epidemic in our environment  
is becoming a new great huddle for policy makers  
whose efforts have always been directed towards the  
control of infectious diseases. The control of infections  
to a great extent has definitely made health  
professionals realize the dangers poised by cancer that  
was generally considered to be rare in our  
environment. It has been called by various names in  
our society such as "jeji", "sankara", etc all these  
referring to mysterious incurable flesh destroying  
disease.

High prevalence of infectious diseases, under-  
reporting, and lack of adequate diagnosis have been  
responsible for the seemingly low cancer incidence<sup>1</sup>.  
However, in the last decade cancer has assumed a  
greater prominence as one of the major causes of  
mortality in Nigeria<sup>1</sup>. In Nigeria, about 100, 000 new  
cases occur every year<sup>1</sup>. The crude incidence rate for  
malignant neoplasms in Ibadan, Nigeria was 33.7 and  
45.1 per 100,000 for males and females respectively.  
Available record shows that cancers in the 60s were  
amongst the 50-70 year age group<sup>2</sup>. Other studies in  
children in Ibadan, Nigeria show that childhood cancer  
accounts for 8.7% of childhood deaths in children  
below the age of 15 years<sup>3,4,5</sup>. There is a rising  
incidence of breast cancer in Ibadan surpassing  
cervical cancer from its usual first position. Previous  
study in Maiduguri, Nigeria placed cervical cancer as  
the commonest cancer in females in that environment<sup>6</sup>.  
Although many studies have been conducted on cancer  
in Maiduguri, a general overview on cancer is not  
known. This study therefore intends to review and also  
compare the relative frequencies of all histologically  
diagnosed cancers in the department of pathology of  
the U M T H from 1989 to 2003.

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## **MATERIALS AND METHODS**

This is a retrospective study of all histologically diagnosed cases of cancer seen at the U M T H, Maiduguri from January 1989 to December 2003. Records of all patients with cancers registered in our surgical day-books were extracted and studied. The department received specimens from most of the states of the former north-eastern state until recently (Year 2000) when some of the Federal Medical Centres started operating histopathology services. The specimens were previously fixed in 10% formal saline, embedded in paraffin wax and sections were stained with routine haematoxylin and eosin. Demographic data of the patients such as age and sex were extracted from our histopathology register, request forms and patients case files. The cancers were classified according to the site/cell of origin. The results were analysed using simple statistical methods and presented in tables. Cases with incomplete demographic data were excluded from the study.

## **RESULTS**

During the study period (January 1989 to December 2003), there were a total of 13,874 biopsies out of which cancer constituted 2341 cases (16.9%). The commonest cancer in our environment was carcinoma of the uterine cervix (19.5%) followed by cancer of the female breast (12.5%). Table I shows the ten most common cancers seen in the U M T H, Maiduguri while Table II shows the most common cancers in males. The seven commonest cancers amongst females are presented in Table III. Gastrointestinal, skin and soft tissue cancers were commoner than prostatic cancer (6.2%) in general contributing 10.5%, 9.1% and 6.3% respectively. However, prostatic cancer is the commonest cancer amongst males. Cancers of the urinary tract (5.5%) and the head and neck (4.5%) ranked 7<sup>th</sup> and 8<sup>th</sup> respectively. Cancer of the urinary tract and the head and neck accounted for 5.5% and 4.5% respectively. These cancers ranked 7<sup>th</sup> and 8<sup>th</sup> respectively.

## **DISCUSSION**

The emergence of cancer as a societal threat in Nigeria and most of the developing countries is linked directly to the control of infectious diseases, greater awareness and a relatively better availability of diagnostic facilities<sup>1</sup>. However, in many tropical countries the incidence of cancer is by far less

common than in the temperate region<sup>7</sup>. The pattern of cancer in our society is somewhat different from what obtains in the western world due to the variation in environmental and socio-economic factors although a changing trend has been observed over the years<sup>8</sup>.

Although infectious diseases and road traffic accidents still account for the high morbidity and mortality rates in our environment, the data presented in this study clearly shows that cancer is not a rare disease in our local environment. The most common cancers in this study were carcinoma of the uterine cervix, breast, gastrointestinal tract and skin in order of frequency. This is in contrast to what was observed in Ibadan<sup>9</sup> and the middle belt of Nigeria<sup>9</sup>. In Jos Nigeria, three most common cancers were carcinoma of the cervix, breast and non-Hodgkin's lymphoma<sup>10</sup>. Our study is closer to the Jos study although lymphoma was in the 10<sup>th</sup> position in our series. In Ibadan Nigeria, a changing trend was observed in the pattern of cancer over the last 40 years with carcinoma of the uterine cervix topping the list in females for 30 years up until 20 years ago when it was overtaken by carcinoma of the breast<sup>8</sup>. Breast cancer has become the most common cancer in American and European women. Areas enjoying low incidence are now seeing an increase in the number of cases of breast cancer. Studies in Europe and America revealed that mutations in BRCA 1 and BRCA 2 genes located on chromosome 17q21 and 13q12-13 are responsible for 10% to 15% of familial breast cancer. Both genes are thought to be tumour suppressor genes<sup>11</sup>. Other risk factors include prolonged exposure to exogenous estrogens, obesity, alcohol consumption, cigarette smoking and high fat diet.

At present, in U M T H, Maiduguri, carcinoma of the cervix has the highest proportion on the list of cancers followed by cancer of the female breast with appreciable increase in the last 5 years. It is possible that in the future the trend may change in favour of breast cancer because of the recent greater increase in the use of contraceptive drugs amongst our female populace and gradual "westernization" of our diet. A previous study in our hospital suggested that breast cancer was the commonest malignancy, however, the study was purely clinical and not histological<sup>12</sup>. This means that breast masses that were not histologically confirmed that could not have necessarily been malignant were included. Nine cases of male breast cancer were recorded in this study.

The commonest cancer in males was prostatic carcinoma that is in agreement with the findings in Ibadan, Jos and the Federal Capital Territory (FCT)<sup>8,9,10</sup>. The disease occurred most frequently in the 7<sup>th</sup> decade of life in our study. Several factors have been incriminated in the aetiology of the disease such as race, family history, hormone levels and sexual behavior<sup>11</sup>. The second and third most common cancer in males and females respectively was skin cancer (5.2% and 4.1% respectively) in this study. A previous study in this environment, placed primary liver cell carcinoma (PLCC) as the commonest cancer in males however, the study was clinically based<sup>13</sup>. Our pathology files contained only 53 cases of histologically proven PLCC from 1989 to 2000.

There were a total of 290 skin cancers out of which 76 were melanomas. Non-melanoma skin cancer (9.1%) included squamous cell carcinoma, basal cell carcinoma, and skin adnexal carcinomas.

Gastrointestinal cancers were in general the third most common cancers in this study (10.5%) and mainly affected the colon and rectum. Majority of the tumours were well differentiated and usually at Duke's stage C2. Majority of our patients were above the age of 50 years which is in contrast to the findings in the FCT and other parts of Africa<sup>9,14</sup>. Colorectal cancer is generally linked to diet and the African diet is said to be protective against the disease in that bulky dietary fibre increases faecal bulk thereby increasing bowel movement and consequently reducing the faecal transit time. This reduces the contact time between bowel mucosa and carcinogens. The role played by mutations in human mismatch repair genes (hMSH2, hMLH1, hPMS1, hPMS2), deleted in colonic cancer (DCC), Adenomatous Polyposis Coli (APC) genes, has been well studied in colorectal carcinogenesis and has given deep insights into the general mechanisms of carcinogenesis<sup>15</sup>. It will be interesting to see if these mutations play any significant role in carcinogenesis among our patients.

The role played by helicobacter pylori in gastric carcinogenesis is been studied as a substantial number of our cases of gastric cancer are the intestinal type.

Soft tissue sarcomas contributed about 6.3% of all cancers in our study, the commonest of which were malignant fibrous; histiocytoma, fibrosarcoma and neurogenic sarcoma. This is similar to the observation in the FCT<sup>9</sup> with 5% but much higher than the Ibadan study (RRF 2%)<sup>8</sup>.

Cancers of the urinary tract were mainly seen in the urinary bladder (110 cases), 70% of which were squamous cell carcinoma (SCC). About 60% of the SCCs were in association with schistosoma haematobium infection. This is not surprising as our rich lake Chad and other river basins form a good habitat for the snail hosts (*Bulinus truncatus* and *Biomphalaria feifferi*). Bladder cancer contributed only 12 cases of cancer in the FCT while the Jos study showed predominance of transitional cell carcinoma<sup>9,10</sup>.

Generally all parts of the body are represented in our study but it is worth noting that cancer of the lymphoreticular system was low (2.9%). Tumours of the head and neck contributed 4.5% while orodental/sinuses contributed 3.3%. Cancers of the bone and cartilage also had a low incidence as well as the eye. Cancers of the brain and spinal cord were not recorded. This may not be unconnected with the lack of neurosurgeons in the whole north eastern region of Nigeria.

#### CONCLUSION.

Our study revealed that cancer is common in our center and the two most common cancers were cervical and breast cancer respectively. Cancer of the uterine cervix is commoner than breast cancer unlike other parts of Nigeria and Africa in general. Therefore there is the urgent need to set up oncology unit to promote prevention and control of cancer.

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**Table I: Ten most common cancers in Maiduguri  
Between 1989 and 2003**

SITE	NO. OF CASES	RELATIVE RATIO FREQUENCY RRF (%)
Cervix	457	19.5
Breast	293	12.5
G I T	245	10.5
Skin	214	9.1
Soft Tissues	146	6.3
Prostate	145	6.2
Urinary Tract	128	5.5
Tumours of Head & Neck	105	4.5
Oro-dental/Sinuses	78	3.3
Lymphoid Tissues	69	2.9

**TABLE II. The most common cancers in males from 1989  
to 2003, (>18 years).**

SITE	NO. OF CASES	RELATIVE FREQUENCY RATIO RRF (%)
Prostate	145	6.2
Skin (NM)*	117	5.2
Urinary bladder	102	4.4
Colon & Rectum	88	3.8
Soft tissues	85	3.6
Tumours of the upper airways	63	2.7
Liver (PLCC)	43	1.8
Lymphoid tissues	37	1.6
Stomach	34	1.4

\*NM Non Melanoma skin cancer.

**TABLE III. The most common cancers in females (> 18 years).**

SITE	NO. OF CASES	RELATIVE FREQUENCY RATIO RRF (%)
Cervix	457	19.5
Breast	293	12.5
Skin (without melanoma)	97	4.1
Ovary	73	3.1
Soft tissues	61	2.6
Colo-rectum	54	2.3
Stomach	24	1.0