MALE BREAST CANCERS IN GHANA

A. B. AKOSA¹, F. O. AMPADU, Y. TETTEY
Department of Pathology, University of Ghana Medical School
P. O. Box 4236, Accra.

SUMMARY
Male breast cancer is a rare disease and accounts for 1% of all breast cancers worldwide. This rarity has resulted in lack of properly controlled prospective epidemiological studies on male breast cancers.

The absence of any documented case study of male breast cancers in Ghana prompted us to review the surgical pathology data of the Department of Pathology, Korle-Bu Teaching Hospital, Accra from 1980 to 1996.

During the period, there were 18 cases of breast carcinomas in males and 735 in females with a male to female ratio of 1:41. No male breast sarcoma was recorded during the period. The age range for male breast cancers was 30-79 years with a mean of 48.5 years. 12.5% of the cases occurred in males under 40 years and the youngest was 30 years old.

Majority of the cases (83%) were invasive ductal carcinoma NOS and there was a case each of in-situ ductal carcinoma, lobular carcinoma with in-situ component and a mucinous carcinoma. Seven of the eight cases in which axillary lymph nodes were retrieved showed metastasis.

The result of our study confirm other studies which showed a higher incidence of male breast cancer in the black.

It was concluded that in Ghana, a prospective study on male breast cancer need to be instituted with the view of assessing the role of testicular injury and testicular diseases, chronic liver diseases, drug treatment for diseases like tuberculosis (isoniazid) and occupational exposure to low frequency electromagnetic fields in the epidemiology of male breast cancer.

Key words: cancer of the breast, cancer of male breast, risk factors

INTRODUCTION
Male breast cancer is a rare disease. On worldwide basis, it accounts for 1% of all breast cancers and make up 0.35-1.5% of all male cancers compared to 23% in women⁴. Because of the rarity of the disease, there has been no properly controlled prospective epidemiological studies. Most of the reported studies are retrospective and highlight the disease among Caucasians. The few studies on mixed populations⁵,⁶,⁷,⁸,⁹,¹⁰ appear to show some racial differences in the male: female ratios in the black population. Such high male/female ratio have been confirmed by work conducted in pure African populations⁵,⁶,⁷,⁸,⁹,¹⁰

The absence of any documented case study of male breast cancers in Ghana prompted us to review the surgical pathology data of the Department of Pathology, Korle Bu Teaching Hospital, Accra from 1980-1996.

The article presents an analysis of the data and reviews the literature with particular reference to aetiological risk factors of relevance in Ghana.

MATERIALS AND METHODS
The Korle-Bu Teaching Hospital, Accra serves as the final referral centre for the country and the Pathology Department receives specimen from every part of the country.

18 cases of male breast cancer were retrieved over the 17 years period (1980-1996). Over the same period 735 female breast cancers were also received in the department. Clinical data was recorded as provided on the histopathology request form.

¹ Author for correspondence
Slides and blocks were retrieved but freshly stained slides were prepared for review by two of the authors ABA and YT.

Haematoxylin and eosin stained slides were examined and where necessary mucin stains, alcian blue and periodic acid Schiff stain with diastase digestion were performed as required.

Histological characterisation of tumours was done according to the classification proposed by WHO and the tumours were graded using Bloom and Richardson's criteria.

**RESULTS**

During the study period, 18 cases of malignant breast carcinomas were seen in males and 735 in females, a male : female ratio of 1:41. No male breast sarcoma was recorded. Thus in Ghana, male breast cancers make up 2.4% (18/753) of breast cancers. The age range was 30-79 years with a mean of 48.5 years. 12.5% of our cases occurred in males under 40 years, the youngest was 30 years old.

The histological classification of the tumours is shown in table 1. 83% (15/18) male breast cancers were invasive ductal carcinomas NOS. (Figure 1) and there was one each of ductal carcinoma in situ, lobular carcinoma with an in situ component and mucinous carcinoma (Figures 2, 3 and 4).

<table>
<thead>
<tr>
<th>Sex</th>
<th>Ductal</th>
<th>Medullary</th>
<th>Lobular</th>
<th>Mucoid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>16</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Female</td>
<td>647</td>
<td>33</td>
<td>37</td>
<td>18</td>
<td>735</td>
</tr>
</tbody>
</table>

**Table 1: Histological Types of Breast Carcinomas in Ghana (1980-1996)**

**Fig. 1:** Invasive ductal carcinoma. Cords and trabeculae of malignant cells invading the stroma. (X 10).

**Fig. 2:** Ductal carcinoma in situ (DCIS). Malignant cells are confined to ducts only. (X 20).

**Fig. 3:** Lobular carcinoma. The malignant cells are uniform, small, round and normochromatic. (X 20).

**Fig. 4:** Mucinous carcinoma. Islands of malignant cells in pool of mucin. (X 10).

**Fig. 5:** Paget's disease of breast. Islands of malignant cells in the epidermis (X 20).
Only two cancers were well differentiated and axillary lymph nodes were retrieved in eight of the cases of which seven showed tumour metastasis. Paget's disease of the breast was noted in one case (Figure 5).

**DISCUSSION**

2.4% of the breast cancers in Ghana occur in males, a proportion much greater than the 1% quoted in the western literature.

This high proportion compared with figures from Southern Nigeria, 2% in Ile-Ife\(^6\), 2.4% in Lagos\(^7\) and 3.75% in Ibadan\(^8\). Hassan and Mabogunye\(^9\), however reported a much higher proportion of 9% in Zaria, Northern Nigeria. Over the 15 years study period in Zaria, 178 female breast cancers were recorded, almost one-third of the 495 cases recorded over a 10 year period in Lagos and less than one-tenth of the 1,946 cases identified over a 20 year period in Ibadan. The marked difference may be due to poor reporting of cases among women in Northern Nigeria for cultural reasons or poor access to Hospitals.

Male Breast Cancers made up 4.8% of breast cancers in Uganda\(^6\), 6.5% in Egypt\(^13\) and 15% in Zambia\(^14\).

Although these figures are not population based, they confirm a higher incidence of male breast cancers in the black population.

<table>
<thead>
<tr>
<th>Author (Reference)</th>
<th>City/Country</th>
<th>Period of Study</th>
<th>No. of Years</th>
<th>No. of cases</th>
<th>Age range (years)</th>
<th>Mean (years)</th>
<th>No. of cases</th>
<th>Ratio / %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ojara 1978 (6)</td>
<td>Zambia</td>
<td>1968-1970</td>
<td>3</td>
<td>13</td>
<td>40-55</td>
<td>51.2</td>
<td>71</td>
<td>1.6/1.5</td>
</tr>
<tr>
<td>Ajayi et al 1982 (7)</td>
<td>Lagos/Nigeria</td>
<td>1971-1980</td>
<td>10</td>
<td>12</td>
<td>30-67</td>
<td>56.3</td>
<td>495</td>
<td>1.42/2.4</td>
</tr>
<tr>
<td>Ihekordia 1994 (8)</td>
<td>Ibadan/Nigeria</td>
<td>1971-1990</td>
<td>20</td>
<td>73</td>
<td>15-75</td>
<td>54.1</td>
<td>1,946</td>
<td>1.26/3.75</td>
</tr>
<tr>
<td>Adenji 1997 (10)</td>
<td>Ile-Ife/Nigeria</td>
<td>1977-1996</td>
<td>19</td>
<td>10</td>
<td>40-80</td>
<td>56.9</td>
<td>503</td>
<td>1.50/2</td>
</tr>
<tr>
<td>Akosa et al</td>
<td>Accra/Ghana</td>
<td>1980-1996</td>
<td>17</td>
<td>18</td>
<td>30-79</td>
<td>48.5</td>
<td>735</td>
<td>1.41/2.4</td>
</tr>
<tr>
<td>El-Gazayerali et al 1963 (13)</td>
<td>Egypt</td>
<td>1960-1966</td>
<td>7</td>
<td>58</td>
<td>25-84</td>
<td>61.9</td>
<td>3,886</td>
<td>1.67/1.5</td>
</tr>
<tr>
<td>Jamal et al 1994 (16)</td>
<td>Rawalpindi/Pakistan</td>
<td>1980-1989</td>
<td>10</td>
<td>50</td>
<td>35-86</td>
<td>58.5</td>
<td>1,644</td>
<td>1.33/3.0</td>
</tr>
<tr>
<td>Morimote et al 1990 (14)</td>
<td>Tokushima/Japan</td>
<td>1960-1966</td>
<td>26</td>
<td>11</td>
<td>51-91</td>
<td>65.7</td>
<td>726</td>
<td>1.66/1.5</td>
</tr>
<tr>
<td>Modan et al 1970 (15)</td>
<td>Israel</td>
<td>1960-1970</td>
<td>9</td>
<td>90</td>
<td>38-74</td>
<td>58.6</td>
<td>2,606</td>
<td>1.13/0.76</td>
</tr>
</tbody>
</table>

*present study*
Is the increased proportion in the black male real? Confirmation has been obtained from studies in mixed populations in South Africa and USA. Bezwoda et al found a higher incidence of male breast cancers in the black population (1.7% compared to 0.78% in the caucasian population). Similar results were obtained by Simon et al in their work in Detroit, USA and Muir et al also showed an increase in black men compared to male Caucasians in seven USA cancer registries.

Studies from Japan and Israel showed male/female ratios in between the lower incidence in Caucasians and the higher incidence among blacks and Jamal et al found a 2.9% incidence in Rawalpindi, Pakistan which is comparable to the African figures. Table 2 shows comparative figures in Africa and parts of the world.

The mean age at presentation in Ghana was 48.5 years, 5-10 years lower than in comparable populations in Africa and significantly younger than in the Caucasian populations. However, as in previous reports, male breast carcinomas in Ghana occurred a decade later than the female counterpart. Ani 1979 found a mean age of 38 years in female breast cancers in Ghana, compared to the mean age of 48.5 years in the male breast cancers.

The type of carcinomas compared favourably with the female analogue, 83% were invasive ductal carcinomas NOS compared to 88% in females.

One case each of a ductal carcinoma in situ, mucinous carcinoma and lobular carcinoma were identified, the later with recognisable in-situ components.

Lobular carcinomas were thought not to occur in males because of the absence of terminal ducts and lobules, however, cases of lobular carcinoma have been reported in the male breast. The two cases of lobular carcinoma in the series by Gifler and Kay 1976 were both in black men and Sanchez et al 1986 reported a case of lobular carcinoma in a patient with Klinefelter syndrome.

Prognosis for males with breast cancer is generally regarded as poor. Early reports showed much worse survival for men than women, particularly for men with axillary node metastasis. More detailed analysis however, of stage of disease suggest that stage for stage the survival is equivalent for men and women. Seven of the eight cases in our series in which axillary lymph nodes were retrieved showed metastasis.

The assessment of survival for our cases was impossible due to loss of patients due to poor follow-up compliance after surgery and poor record keeping.

Oestrogens play a major aetiological role in breast cancers which is consistent with the markedly high oestrogen levels in females and the 40-100 fold increase of female breast cancers. Thus feminisation genetically or by environmental exposure appears to increase the risk.

Symmers 1968 reported two cases of male breast cancer among trans-sexuals. The therapeutic regimes required to induce male to female sexual change include castration and administration of large doses of female hormones. Other cases have also been reported by Pritchard et al 1988.

The treatment of prostate cancer with stilboestrol could lead to an increased risk of breast cancer. Sasco et al 1993 found a worldwide correlation between the incidence of the two tumours.

Testicular injury and disease including orchitis unspecified or in particular mumps at or after 20 years, orchiectomy or cryptorchidism show an increase in the crude odd ratio. Testicular injury which may occur inadvertently during herniorrhaphy could add to testicular insufficiency, a relative increase in oestrogen levels and then breast cancer.

Klinefelter syndrome, a rare chromosomal abnormality with an XXY chromosomal pattern is associated with gynaecomastia, testicular insufficiency and increased excretion of follicle stimulating hormone and breast development resembling that of the female. Terminal ducts and lobules normally absent in the male breast are present and the incidence of male breast cancer approaches that of the female.

Liver damage from hepatitis, alcohol and schistosomiasis has been used as an explanation for the increased cases from Africa. However, the hepatitis B carrier status is just as high in South East Asia as in Africa causing increased chronic liver disease but no such documented increases in male breast cancer. Alcohol-induced liver cirrhosis is a well recognized cause of gynaecomastia but its role in the causation of male breast cancer is unsubstantiated.

In Ghana schistosomiasis is endemic but the incidence of male breast cancer is low in comparison with the report from Egypt. The role of schistosomiasis in
the causation of male breast cancer through liver disease has also been discredited by other workers.

Drugs were also noted to increase the risk of development of male breast cancer in particular isoniazid used in the treatment of tuberculosis.\(^3,29\)

The significance of a positive family history of male breast cancer is as in the case of female breast cancers. A positive family history of breast cancer (either male or female) among first degree relatives is much more frequent and is associated with an increased risk.

Radiation has been linked to many types of cancers including the female breast cancer. Rosenblatt et al 1990\(^9\) found strong evidence to suggest that male breast cancer can also be linked to radiation exposure.

The role of electromagnetic fields should be of even greater interest. There have been reports linking occupational exposure to very low frequency electromagnetic fields and various types of cancer such as leukaemia and brain tumour.

Tynes and Anderson 1990\(^3\) found 12 cases of male breast cancer in a cohort of 37,952 male electrical workers with occupational exposure to electromagnetic fields compared to the expected rate of 5.8 cases. The risk was increased for electricians, telephone linemen and electric power workers.\(^33\)

In Ghana, a prospective study on male breast cancer need to be instituted with the view to assessing the role of testicular injury and testicular diseases, chronic liver disease, isoniazid used in the treatment of endemic tuberculosis and exposure to low frequency electromagnetic fields, in the epidemiology of male breast cancers.

REFERENCES
the causation of male breast cancer through liver
disease has also been discredited by other workers.

Drugs were also noted to increase the risk of
development of male breast cancer in particular
isoniazid used in the treatment of tuberculosis.32,33

The significance of a positive family history of male
breast cancer is as in the case of female breast cancers.
A positive family history of breast cancer (either male
or female) among first degree relatives is much more
frequent and is associated with an increased risk.

Radiation has been linked to many types of cancers
including the female breast cancer. Rosenblatt et al
199031 found strong evidence to suggest that male
breast cancer can also be linked to radiation exposure.

The role of electromagnetic fields should be of even
greater interest. There have been reports linking
occupational exposure to very low frequency
electromagnetic fields and various types of cancer
such as leukaemia and brain tumour.

Tynes and Anderson 199031 found 12 cases of male
breast cancer in a cohort of 37,952 male electrical
workers with occupational exposure to
electromagnetic fields compared to the expected rate
of 5.8 cases. The risk was increased for electricians,
telephone linemen and electric power workers.32

In Ghana, a prospective study on male breast cancer
need to be instituted with the view to assessing the
role of testicular injury and testicular diseases, chronic
liver diseases, isoniazid used in the treatment of
domestic tuberculosis and exposure to low frequency
electromagnetic fields, in the epidemiology of male
breast cancers.

REFERENCES
1. Sasco AJ, Lowenfels AB, Pasker - de Jong P.
Epidemiology of male breast cancer. A meta-
analysis of published case control studies and
discussion of selected aetiological factors. Int J
Cancer 1993;53:538-549.

2. Muir C, Waterhouse J, Mack T, Powell J,
Whealans eds. Cancer incidence in five continents:

3. Simon MS, Mcknight E, Schwartz A, Martinos,
Swanson GM. Racial differences in cancer of
the male breast - 15 years experience in the
Detroit Metropolitan Area. Breast Cancer Res

4. Bezwoda WR, Hesdorffer C, Dansey R, de
Moor N, Derman DP, Bronde S, Lange M.
Breast Cancer in men. Clinical Features,
Hormone Receptor status and response to

5. Bhagwandeen SB. Carcinoma of the male breast

6. Ojara EA. Carcinoma of the male breast in
Mulago Hospital, Kampala. E Afr Med J

7. Ajayi DOS, Osegbe DN, Ademiluyi SA.
Carcinoma of the male breast in West Africans
and a review of the world literature. Cancer
1982;50:1664-1667.

8. Ihekewaba FN. Breast cancer in men in black
Africa: A report of 73 cases. Jr Coll Surg
Edinb 1994;344-347.

9. Hassan I, Mabogunje O. Cancer of the male
breast in Zaria, Nigeria E Afr Med J 1995;72:
457-456.

10. Adeniji KA, Adeyinka KA, Odesanmi WO,
Fadiran OA. Histopathological analysis of
carcinoma of the male breast in Ile-Ife Nigeria.

11. World Health Organisation (WHO) Histological
Typing of Breast Tumours. 2nd ed. International
Histological Classification of Tumours, No 2,

12. Bloom HJ, Richardson WW. Histological
grading and prognosis in breast cancer. Br J

13. El-Gazayerli MM, Abdel-Azziz AS. On
bilharziasis and male breast cancer in Egypt
A preliminary report and review of the
literature Br J Cancer 1963;17:566-571.

14. Morimoto T, Komaki K, Yamakura T, Oommine
Y, Konishi Y, Mori T, Monzen Y. Cancer of the

15. Modan B, Mintz U, Finkelman J. Male breast
cancer in Israel. Selected epidemiological and


