EPIDEMIOLOGY OF BREAST CANCER IN AFRICA

Joe-Nat Clegg-Lamptey
School of Medicine and Dentistry, University of Ghana
I have no conflict of interest
Breast Cancer in Africa: Epidemiology

- Incidence: Moderate but Increasing
- Young age of patients
- Advanced disease / Long duration of symptoms
- Tumors have adverse biological features
  - Triple negative (ER/ PR/ HER2) tumors
  - Poor grade of cancers
  - Node positive cancers
  - Inflammatory Breast Cancer
- Poor prognosis, (High mortality/ Low survival)
  - Social-cultural issues
  - Advanced disease
  - Biology of tumor
  - Treatment
Source: Globocan 2012
Breast Cancer burden in Africa

In Africa, breast cancer is responsible for **28% of all cancers** and **20% all cancer deaths in women**. (16% & 11% both sexes)

Incidence rates are still generally low in Africa, estimated below **35 per 100,000** women in most countries (compared to over 90–120 per 100,000 in Europe or North America).

Precise incidence figures in Africa are lacking given the absence of cancer registration in most countries.
Estimated age-standardized breast cancer incidence rates per 100,000. Source: Globocan 2012
Estimated age-standardized breast cancer incidence rates per 100,000. Source: Globocan 2012

<table>
<thead>
<tr>
<th>Region (ASR)</th>
<th>North</th>
<th>West</th>
<th>East</th>
<th>Mid</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence (ASR) /100,000</td>
<td>34.4</td>
<td>38.6</td>
<td>30.4</td>
<td>26.8</td>
<td>38.9</td>
</tr>
<tr>
<td>Mortality (ASR) /100,000</td>
<td>17.4</td>
<td>20.0</td>
<td>15.6</td>
<td>14.9</td>
<td>15.5</td>
</tr>
</tbody>
</table>
Variability of Breast Cancer Incidence from some National population-based data.

<table>
<thead>
<tr>
<th>Country</th>
<th>Kenya (Nairobi)¹²</th>
<th>Zimbabwe ¹³</th>
<th>Uganda ¹⁴</th>
<th>Malawi ¹⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence rates (ASR) /100,000</td>
<td>52</td>
<td>33</td>
<td>34</td>
<td>4</td>
</tr>
</tbody>
</table>

**Reasons for diversity**
- Methodology?
- lack of access to health services?
- lack of pathologic diagnosis?
- true differences in risk factors?
Breast Cancer burden in Africa

Recent Globocan data estimates (2012)

<table>
<thead>
<tr>
<th></th>
<th>Diagnosed</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>134,000</td>
<td>63,000</td>
</tr>
<tr>
<td>Sub-Sahara</td>
<td>94,000</td>
<td>48,000</td>
</tr>
</tbody>
</table>

Expected to double in next 30 years
Recent incidence data from registries in Kampala, Harare, the Gambia and Mali-Bamako provide substantial support for the notion of an increasing breast cancer incidence in sub-Saharan Africa.

The Gambia and Mali reported the greatest rate of increase for women under age 55 years
### Annual increases in Breast Cancer Incidence from selected Cancer Registries

<table>
<thead>
<tr>
<th>Registry</th>
<th>Annual increase in Incidence / 100,000</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zimbabwe (Black population)</td>
<td>4.9%</td>
<td>Increase in over 50 year olds</td>
</tr>
<tr>
<td>Uganda</td>
<td>3.7%</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>6.5%</td>
<td>Greatest in postmenopausal women</td>
</tr>
<tr>
<td>S Africa (Rural area)</td>
<td>4.3%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Kantelhardt EJ et al. A Review on Breast Cancer Care in Africa

Source: Brinton LA et al \(^1\)
Young age of patients

• The average age of diagnosis of breast cancers among African women tends to be women 50 years or younger - a considerably younger age than seen in Caucasian populations.

• Likely due in part to the fact that fewer African women live past 65 years of age compared to women in developed countries.
• Age structure may not entirely explain the younger breast cancer ages in Africa.

• African-American women also tend to develop breast cancers at younger ages than Caucasian women in the U.S.

• There may be additional factors involved, including
  - Genetic ? Environmental ? Interplay of the two?

• African women develop unique breast tumor subtypes which could also be an important contributory factor to the unusual age distribution noted.
Tumor Characteristics

In majority of studies

- Tumors tend to be large, **Size >2 cm.**

- A high frequency of **poorly differentiated tumors**, although there has been considerable variation across studies, with rates ranging from 16–83%.

- **>70% of patients had node positive (Stage III tumors)**
  - lack of organized screening/detection programs ?
  - potentially more aggressive tumors ?
  - Or BOTH !
Many of the tumors have been reported as hormone receptor negative.

• Substantial variation across studies, with rates ranging from 36–79% (ER negativity) and 30–87% (PR negativity).

• Fewer studies have reported on HER2 status, but tumors have largely been classified as not expressing this marker.

• Result: high rates of triple negative cancers reported, with a number of studies showing that the majority of African women are diagnosed with such tumors.
Tumor Characteristics

To what extent does the absence of markers reflect issues related to tissue collection and processing, i.e. inaccurate IHC results?

- poor quality specimens from large and necrotic tumors
- prolonged delay before fixation
- questionable quality of fixation materials: *Buffered 10% formalin*, prolonged stay in fixative,
- poor laboratory techniques
- limited quality assurance/quality control practices
Hormone negative tumours

• The rate of ER negativity was found to be only 27% in a Nigerian study that used core needle biopsies, which are less prone to delays in fixation that can influence IHC results. 6

• Two recent investigations 7,8 (each involving over 1,200 cases) using standardized methods for collection, processing and classification of tumors have reported rates of triple negative cancers closer to 20%.
Poor tumour grade, Inflammatory Breast cancer

- Majority of publications have poorly differentiated Grade 3 tumors \(40 - 83\%\)

- North Africa: High rate of Inflammatory Breast Cancer.\textsuperscript{10}
  Studies from Tunisia
  - 1969-1974 \(> 50\%\)
  - Recent studies: < 10\%
Poor survival

Recent study (Sankaranarayanan et al): survival from colorectal, breast and cervix cancer is markedly lower in Africa compared to other regions of the world, even the other low resource countries.

In The Gambia, the 5-year survival did not exceed 22% for these malignancies.

In Ghana, Breast overall 5-year survival was 25%. A recent study from Ghana: Stage 0 & 1 (>90%); Stage 4 (<20%)

- Poor survival is a result of advanced disease
Breast Cancer in Africa: Epidemiology

- Incidence: Moderate but Increasing
- Young age of patients
- Advanced disease / Long duration of symptoms
- Tumors have adverse biological features
  - Triple negative (ER/ PR/ HER2) tumors
  - Poor grade of cancers
  - Node positive cancers
  - Inflammatory Breast Cancer
- Poor prognosis, (High mortality/ Low survival)
  - Social-cultural issues
  - Advanced disease
  - Biology of tumor
  - Treatment
Failure to Provide of Access to Care

Limited facilities for detection and treatment of cancer in most African countries.

Patients have to travel long distances for pathology/diagnostic services.

Cost of care: Prohibitive (biopsy, pathology, surgery, chemotherapy, radiotherapy).
A sense of hopelessness and fatalism

Fear of mastectomy
- Associated with death
- Stigma (including loss of spouses)

A lack of knowledge surrounding cancer diagnosis and treatment

Non-acceptance of hospital treatment and/or

Preferences for alternative care
Failure of women to Access Care

• Cancer awareness is low in most African countries. A UICC survey: 25% of Africans surveyed believed that cancer had no cure and only 36% believed cancer was a major health issue.\(^9\)

• Many women delay seeking medical attention until their tumors are quite advanced (In Ghana and Nigeria, a mean delay of about 10 months between the onset of symptoms and presentation).

• Women initially seek care from traditional healers. (Cameroon study: 55% went to traditional healers before presenting for medical consultation)

• Cancer is often viewed as a disease of the spirit
Recommendations

More attention is needed on primary and secondary preventive efforts.

Educate women about the importance of early detection and access to care.

Cancer registries

Improve access of care
“If someone is washing your back, you should wash your front”
References

4. Mohammed S, Hartford J. Sorting reality from what we think we know about Breast cancer in Africa. PLoS Med. 2014 Sep 9;11(9):e1001721. 10.1371/journal.pmed.1001721
Thank you!