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Full Length Research Paper

Male breast cancer in Yaounde, Cameroon: a population study and review

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In order to find out the profile of breast cancer among males in our community, this 6 years retrospective study was carried out using data from the Yaounde Cancer Registry from 2004 to 2010. A total of 43 patients, giving an annual incidence of 7, aged 26-80 years (average 51.1 years) were found. This constituted 2.1% of all breasts and about 1.4% of all cancers diagnosed in the population. Majority of our patients (87%) were of intermediate or high social status and presented at late stages (III or IV). The morphology of the tumour was predominantly a duct carcinoma (86%), diagnosed mainly on biopsy specimens (79%) or by Fine Needle Aspiration Cytology (18.6%). Though the incidence of the disease is still low in this community, public education needs to be intensified. This is to induce patients to present earlier, a key factor in the management outcome of this disease, which is still erroneously considered a female disease. Further studies to document trends on male breast cancer are recommended.

Keywords: Male, breast cancer, Cameroon

INTRODUCTION

Cancer is a global health problem. It is among the three leading causes of death in the developing world. According to the World Health Organization's recent projection (2010), cancer caused about 7.6 million deaths in 2005, accounting for 13% of death worldwide and it will result in about 84 million deaths by year 2015 (Jemal et al., 2012). Globally, about one percent of breast cancer develops in males (Korde et al., 2012). It is estimated that

about 2,140 new cases are diagnosed annually in the United States (US) and about 300 in the United Kingdom. The number of annual deaths in the United States is about 450 (Wingo et al., 2008). Incidences of male breast cancer have been increasing which raise the probability of a genetic risk with other family members developing the disease (Orr et al., 2012).

In Cameroon, cancer has been found to be a public health problem. According to the National Cancer Control Committee, the total cancer burden in the country has increased from an annual incidence of 12.000 in 2004 to 14.000 in 2010 with a prevalence of about 25.000 cases (Enow et al., 2012). Breast cancer is the leading cancer

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Table 1. Distribution of patients by age

Age range	Frequency	% of total
0-19	0	0
20-29	2	4.6
30-39	11	25.6
40-49	8	18.6
50-59	9	20.9
60-69	7	16.3
70-79	4	9.4
≥80	2	4.6
All ages	43	100

Table 2. Morphology of male breast cancer

Morphology	Frequency	%
Duct carcinoma	37	86
Lobular carcinoma	3	7.0
Intraduct Papillary adenocarcinoma	3	7.0
All morphology	43	100

in Cameroon accounting for about 30% of all cancers diagnosed in the community (Enow et al., 2012).

Male cancer presents a similar pathology as female breast cancer. Because the disease is rare in males, its assessment and treatment rely on experiences and guidelines that have been developed in female patients (Gómez-Raposo et al., 2010). However, there are significant differences between male and female breast cancer. Lesions are easier to find in men due to the smaller breast size; but lack of awareness and the presence of gynecomastia may mask the condition and postpone seeking medical attention. With the relative infrequency of male breast cancer, randomized studies are lacking (6 Gomez). We were interested in this study to find out the profile of breast cancer in males, a disease perceived ignorantly to affect only females in our community.

MATERIALS AND METHODS

The data of the Yaounde Cancer Registry was reviewed in this 6 years retrospective study between 2004 and 2010. All cases of breast cancer diagnosed in males during the period under study were retrieved, assembled and analyzed. All cases diagnosed out of the study period were rejected. Epidemiological data including the age, profession, educational level, stage and histology of the tumour were analyzed. The socio-economic level of the patients was inferred from the profession and

educational level. Chi-square tests were used to assess the significance of findings.

RESULTS

A total of 43 males were found to have breast cancer in a six-year period (2004-2010), giving an annual average of 7 cases, in the Yaounde population. This constituted 2.1% of all breasts and about 1.4% of all cancers diagnosed in this population during the period under study. The age range of the patients was 26-80 years, with a mean of 51.1 years, and median of 50 years. The age range 30-39 years formed the cluster of incidence of the disease and most patients (65.1%) were between 30-59 years.

Considering the population demography, the incidence rate per 100.000 inhabitants was highest among the age group 45-54 years. The Crude Rate (CR) is 1.4, Age Standardized Rate (ASR) is 1.8, and the Cumulative Rate (CR) 0-74 years is 0.2. One patient (2.2%) had multiple primary cancers and another was seropositive to Human Immunodeficiency Virus (HIV). Majority of our patients (87%) were of intermediate or high social status. The disease was diagnosed at late stages (III or IV) amongst 55% of the patients and the tumour morphology was a pure invasive duct carcinoma in 86% of patients. The diagnosis was made on biopsy specimens in 79% of cases and by Fine Needle Aspiration Cytology (FNAC) in 18.6%.



Figure 1a



Figure 1b

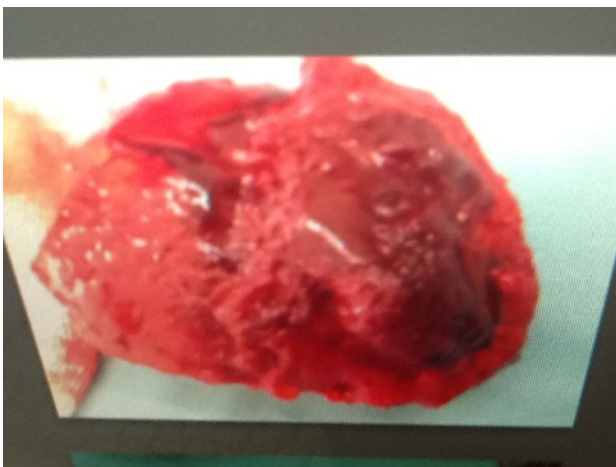


Figure 1c

Figures 1a-c. Macroscopic and surgical iconographic images of male breast cancer

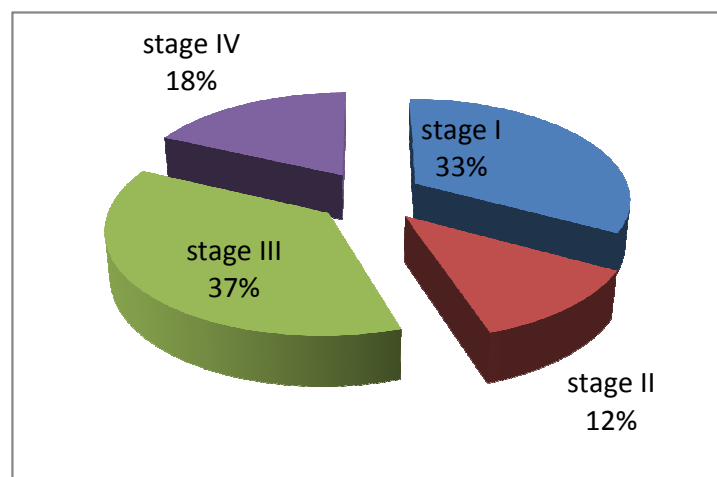


Figure 2. Pie chart illustration of disease stage at diagnosis

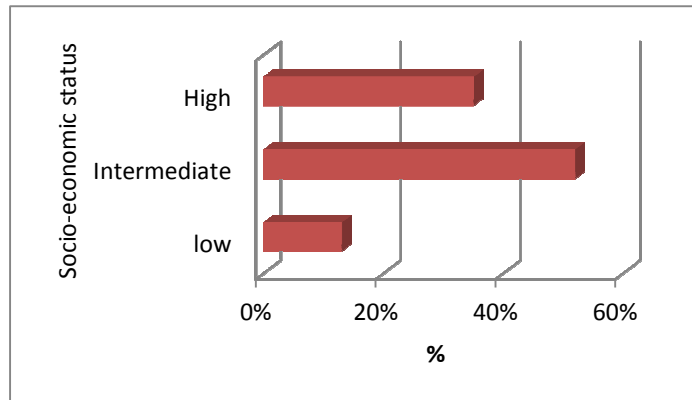


Figure 3. Socio-economic status of male breast cancer patients.

Table 3. Basis of diagnosis of tumours

Basis of diagnosis	Frequency	%
Histology	34	79
cytology	8	18.6
Clinical investigation/ultrasound	1	2.4
All basis	43	100

Table 4. Disease incidence rate/100.000 inhabitants by age

Age group (years)	Incidence/100.000
0-24	0.0
25-29	0.6
30-34	1.5
35-39	5.4
40-44	2.4
45-49	5.4
50-54	5.5
55-59	2.1
60-64	2.5
65-69	3.4
70-74	9.2
75-79	6.5
≥80	19
All ages (ASR)	1.8

*Crude Rate (CR) =1.4, *Percentage (%) = 2.1, * Age Standardized Rate (ASR) = 1.8,

*Cumulative Rate (CR) 0-74 years= 0.2. Compare with ASR for female at 35.

DISCUSSION

Cancer is a global health problem. About 72% of cancer deaths in 2008 occurred in low- and middle-income

countries. In Africa, 650,000 people of estimated 965 million are diagnosed with cancer annually and lifetime risk of dying from cancer in African women is two times higher than in women living in developed countries

(Parkin et al., 2002). Previously breast cancer was the second leading cause of cancer death among women in Sub-Saharan Africa. Recently it was noted to become the most commonly diagnosed cancer in women in several Sub-Saharan African countries. This is a shift from previous decades in which cervical cancer was the most commonly diagnosed cancer in many of these countries (Gómez-Raposo et al., 2010). Breast cancer is 100 times more common in women than in men. Male breast cancer is a rare condition, accounting for only about 1% of all breast cancers. A man's lifetime risk of developing breast cancer is about 1/10 of 1%, or one in 1,000 (Cui et al., 2009). The American Cancer Society estimates that in 2010, about 1,970 new cases of breast cancer in men would be diagnosed and that breast cancer would cause approximately 390 deaths in men (in comparison to almost 40,000 women who die of breast cancer each year) (Wingo et al., 2008).

The disease has always been reported to be the commonest cancer in this community, accounting for about 30% of the total cancer burden (Enow et al., 2012). Many risk factors associated with urbanization and economic developments have been cited to contribute to this increase in breast cancer incidence. These factors include early menarche, late childbearing, having fewer children, obesity, and increased awareness and detection (Zaritsky and Dibble, 2010; Hartmann et al., 2005). The most common types of breast cancer in men are invasive ductal or unclassified carcinomas (93.4 percent) and papillary carcinoma. While intraductal cancer, inflammatory carcinoma, and Paget's disease of the nipple have been described, lobular carcinoma in situ has not been seen in men (Brinton et al., 2010; Wisinski and Gradishar, 2010). The tumour morphology in our study was mainly a pure invasive duct carcinoma (in 86% of patients) while a lobular and papillary carcinoma were respectively found in 7% of cases.

The annual incidence of male breast cancer found in this study is 7 with and a prevalence rate of 2.1%. This rate is similar to Ndom (Ndom et al., 2008) who found a prevalence of 2.5% in a previous hospital-based study in the same community. This rate is higher than that reported from India, with 8 out of 1,200 (0.7%) male cancer diagnoses in a pathology review representing breast cancer. The age standardized rate (ASR) of male breast cancer in our series is 1.8/100.000 compared to 35/100.000 in females. In the US the same rate is 1.3/100000 and 120.9/100000 for males and females respectively (Wingo et al., 2008).

Age is the most common risk factor for breast cancer in both men and women. Males have been known to be diagnosed of breast cancer at a later age than females. The tumor can occur over a wide age range, but typically appears in men later—at age 67 years on average—than in women with their average at 63 (Wisinski and Gradishar, 2010). The age range of our patients is 26-80 years, and mean is 51.1 years at an average of 50 years.

The age range 30-39 years formed the cluster of incidence of the disease and most patients (65.1%) were between 30-59 years (table I). For females in the same population, the average age for breast cancer is 47 years. Considering the population demography, the incidence rate per 100.000 inhabitants was highest among the age group 45-54 years. The Crude Rate (CR) is 1.4, Age Standardized Rate (ASR) is 1.8, and the Cumulative Rate (CR) 0-74 years is 0.2 (table 5). Known risk factors for the disease include radiation exposure, exposure to female hormones (estrogen), and genetic factors. High estrogen exposure may occur by medications, obesity, or liver disease, and genetic links include a high prevalence of female breast cancer in close relatives (Webb et al., 2004; Berkey et al., 2010).

The relative risk of breast cancer for a female with an affected brother is approximately 30% higher than for a female with an affected sister (Orr et al., 2012). The most common breast condition in men is gynecomastia which results from a hormone imbalance in the body (Niewoehner and Schorer, 2008). This benign condition does not require treatment, unless it is desired or causes pain. In these cases, it can be treated with hormone therapy or surgery (Niewoehner and Schorer, 2008). Presently it is unclear whether the condition is related to breast cancer. Although some data suggest it may increase the risk of breast cancer in men, most studies have found no link between the two (Fentiman et al., 2006; Olsson et al., 2002).

The highest risk for male breast cancer is amongst men with Klinefelter syndrome (Espey et al., 2007). Male BRCA mutation carriers are thought to be at higher risk for breast cancer as well, with roughly 10% of male breast cancer cases carrying BRCA2 mutations, and BRCA1 mutation being in the minority (Fentiman et al., 2006; Mohamad and Apffelstaedt, 2008; Thorlacius et al., 1998). Men can inherit a BRCA2 mutation from either parent. A man who has a BRCA2 mutation can pass the mutation on to children of both sexes. It is recommended that men diagnosed with breast cancer have genetic testing for possible BRCA2 mutations. Men who have a BRCA2 mutation have about a seven percent chance of developing breast cancer by age 70 (Tai et al., 2007). (In comparison, women who have a BRCA2 mutation have a 40 to 60 percent chance of developing breast cancer by age 70) (Chen and Parmigiani, 2007). Men with a BRCA2 mutation are also at an increased risk for other types of cancer, such as prostate cancer. Other genes may have a possible link to breast cancer in men (Orr et al., 2012). Whether or not a man carries a BRCA2 mutation, having a family member with breast cancer increases the chances of developing the disease (Giordano et al., 2004).

Exposure to large amounts of radiation early in life and chronic alcoholism may also be linked to an increased risk of breast cancer in men (Liukkonen et al., 2010). As in females, infiltrating ductal carcinoma is the most

common type (table 2). Although breast cancer is not among HIV-defining cancers, the disease has been described among immune depressed persons in previous studies (Lorraine et al., in press). 1 out of 43 patients in this study was seropositive for HIV. Another patient had breast cancer associated with another cancer type. These findings have been documented in previous reports (Enow and Ngowe, 2013).

Breast cancer is usually associated with a high socio-economic class in females. This is because women from affluent socio-economic groups are more likely to have their first child at a later age, have fewer children in their lifetime and take hormone replacement therapy. Each of these factors is associated with a slightly higher incidence of breast cancer (Enow et al., 2013; Krieger et al., 1999). Previous studies on the impact of social class on incidence of breast cancer in males have not been carried out. In this series we observed that, like in females, a high socio-economic class predisposes to breast cancer in males. A significant proportion of our patients ($p < 0.05$) with breast cancer were of intermediate or high social status (87%) (figure 3).

Most breast lesions are detected by the patient. Typically breast self-examination (BSE) leads to the detection of a lump in the breast which requires further investigation (figure 1 a-c). Other less common symptoms of breast cancer include nipple discharge, nipple retraction, swelling of the breast, or a skin lesion such as an ulcer. Ultrasound and mammography may be used for its further definition. The lump can be examined either by a needle biopsy where a thin needle is placed into the lump to extract some tissue or by an excision biopsy under local anesthesia. The diagnosis amongst our patients was made predominantly on biopsy (79%), compared to cytology (18.9%) specimens (table 3). This finding was statistically significant ($p < 0.5$).

Not all palpable lesions in the male breast are cancerous. A biopsy may reveal a benign fibroadenoma. In a larger study from Finland the average size of a male breast cancer lesion was 1.8 cm (Liukkonen et al., 2010). Beside the histologic examination, estrogen and progesterone receptor studies are carried out. The HER2 test is further used to check for a growth factor protein.

Lesions are less contained in men as they do not have to travel far to infiltrate skin, nipple, or muscle tissue. Thus, lesions in men tend to be more advanced (Liukkonen et al., 2010). It is reported that almost half of male breast cancer patients are stage III or IV. In our study 55% of the patients were diagnosed at advance stages (III or IV) (figure 2), although this finding was not statistically significant ($p > 0.1$). Breast cancer in men spreads via lymphatics and blood stream like female breast cancer. Accordingly, the TNM staging system for the disease is the same for men and women. In addition to TNM staging, surgical staging could also be used. It is the same as in female breast cancer and facilitates treatment and analysis (Korde et al., 2010).

The size of the lesion and lymph node involvement determine prognosis. Small lesions without lymph node involvement have the best prognosis. Breast cancer cells may or may not have three important receptors: estrogen receptor (ER), progesterone receptor (PR), and HER2/neu. Thus tumour cells may be ER positive (ER+), ER negative (ER-), PR positive (PR+), PR negative (PR-), HER2 positive (HER2+), and HER2 negative (HER2-). Cells with none of these receptors are called basal-like or triple negative (Dent et al., 2007). ER+ cancer cells depend on estrogen for their growth, so they can be treated with drugs to reduce estrogen (eg tamoxifen), and generally have a better prognosis (Vogel et al., 2010).

Generally, HER2+ have a worse prognosis, however HER2+ cancer cells respond to drugs such as the monoclonal antibody, trastuzumab, (in combination with conventional chemotherapy) and this has improved the prognosis significantly (Romond et al., 2005). Estrogen receptor and progesterone receptor status and HER2/neu (Human Epidermal Growth Factor Receptor 2) gene amplification need to be reported as they may affect treatment options. In the vast majority of men with breast cancer hormone receptor studies are positive, and those situations are typically treated with hormonal therapy. About 85% of all male breast cancers are estrogen receptor-positive, and 70% are progesterone receptor-positive.

The tumour can recur locally after therapy or become metastatic. Treatment largely follows patterns that have been set for the management of postmenopausal breast cancer (Liukkonen et al., 2010). The initial treatment is surgical and consists of a modified radical mastectomy with axillary dissection or lumpectomy and radiation therapy. The results of treatment are the same as in women. Sometimes, mastectomy with sentinel lymph node biopsy is a treatment option. In men with node-negative tumors, adjuvant therapy is applied under the same considerations as in women with node-negative breast cancer (Yi et al., 2012). Similarly, with node-positive tumors, survival is improved using the same adjuvants as affected women (chemotherapy plus tamoxifen and other hormonal therapy). There are no controlled studies in men comparing adjuvant options (Kerlikowske et al., 2002).

Locally recurrent disease is treated with surgical excision or radiation therapy combined with chemotherapy. Distant metastases are treated with hormonal therapy, chemotherapy, or a combination of both. Bones can be affected either by metastasis or weakened from hormonal therapy. In this case, bisphosphonates and calcitonin may be used to counterbalance this process and strengthen bones. Hormonal treatment may be associated with hot flashes and impotence.

Adjusted for age and stage the prognosis for breast cancer in men is similar to that in women. Although from other studies men initially appeared to have a poorer 5-

year survival ratio than women, and after making adjustments for age, year of diagnosis, stage of cancer, and treatment, were found to have a considerably better relative survival rate than women (Kalyani et al., 2010). Prognosis is more favorable for smaller tumor size and absence or paucity of local lymph node involvement.

CONCLUSION

Breast cancer is a rare disease in males though the incidence is relatively high in our population. The disease has similar profile in our environment to that reported in other communities, though few studies have been carried out on the disease globally. Management of the disease is largely based on studies on female patients. Due to ignorance, male patients present at late stages with poor prognostic outcome. Public education needs to be intensified and more studies on male breast cancer carried out to document trends and improve on the overall management and treatment outcome of cases.

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