Journal of Medicine and Medical Sciences Vol. 1(4) pp. 091-096 May 2010
Available online http://www.interesjournals.org/JMMS

Case Report

Breast mass in a male Nigerian adult

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Accepted 13 May, 2010

A 57 year old car mechanic presented with a painless right breast mass which started in form of a boil and has been increasing in size. A chest x-ray, ultrasound scan and a conventional mammography done confirmed a well defined rounded mass which was not spiculated but was attached to the retro-mammary plate. There was no associated architectural distortion or suspicious calcification. An ACR Bi-rads 3 category lesion was diagnosed and a workup sonomammography was recommended. Ultrasound scan revealed a well defined, lobulated, heterogeneous mass with a distinct capsule suggesting a final Bi-rads 4 category lesion. A fine needle aspiration biopsy was recommended but patient opted for a mastectomy. The histology report after mastectomy however revealed an invasive lobular carcinoma with an invasive ductal component, Grade II. We present this rare disease of male breast cancer, giving a brief literature review. Also the relevance of the imaging modalities and histology in its diagnosis is highlighted.

Key words: Breast Cancer, Nigerian, Male

CASE REPORT

A 57 year old male car mechanic, married with five children, presented at the surgical Out-Patient Clinic with a nine month history of right breast swelling. It started as a small boil in the right breast and progressively increased in size. There was no associated pain or nipple discharge; however, occasional peppery sensations was felt. The left breast was normal.

He had a past history of laparotomy 8 years prior to presentation because of an abdominal pain during which a mass was removed, biopsied and diagnosed as colon cancer for which he received six weeks of chemotherapy.

His family history revealed that his mother and brother died of "cancer" though he could not tell their sites and his sister died of a jaw swelling.

Clinical examination revealed an elderly man weighing 78Kg, not pale, afebrile and anicteric. Systemic examination revealed normal respiratory, cardiac, and central nervous systems apart from the abdominal scar from previous operation.

The right breast was enlarged affecting the nipple which was not only displaced medially but also inverted (Figure 1A), stretching out the skin over the breast, resulting in a glistening effect over the outer margin of the breast, Figure 1B. It was not warm to touch but there was a change in coloration of its overlying skin when compared to the left breast. The breast was hard on palpation and non tender. An immobile mass was felt within it measuring 8 x 6cm, in the lower outer quadrant. There was no sore or palpable axillary lymph node bilaterally.

Laboratory investigations showed normal packed cell volume (PCV), full blood count (FBC) as well as Electrolyte and Urea (E&U) levels.

An Antero-Posterior chest radiograph done showed an

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ABBREVIATIONS

CC: Cephalocaudal
MLO: Mediolateral Oblique

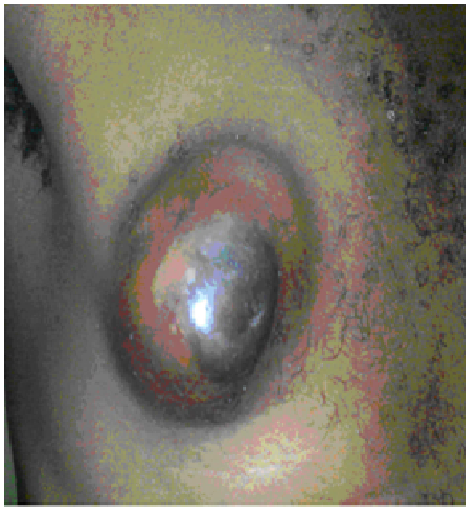

Figure 1A

Figure 1B

Figures 1A and B. Photographs of the end on and side views of the large right breast with inverted nipple.

Figure 2A (CC)

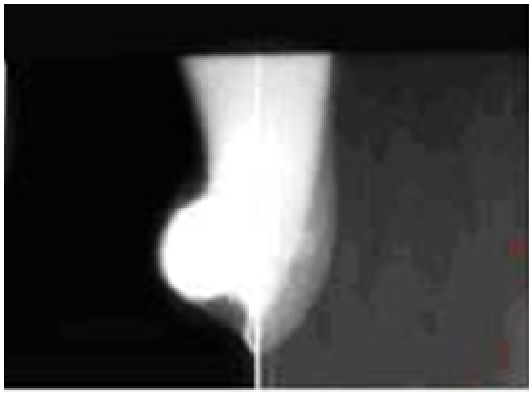

Figure 2B (MLO)

Figures 2A and B CC & MLO views of a mammogram of the right breast showing a well defined dense mass with blurred margin.

ill-defined soft tissue mass shadow in the right lower lung zone around the nipple area. There were no bony abnormality or lung lesions seen. Cardiac size and shape were normal.

Conventional mammogram revealed a well defined rounded highly dense mass in the lower outer quadrant of the right breast. Its margin was smooth, though blurred and appeared attached to the retro-mammary breast plate, Figures 2A and B.Tere were no evidence of calcification seen within the mass. An impression of a Bi-rad 3 ACR lexicon category lesion was made and a fine needle biopsy was suggested for further evaluation.

Further investigation using an ultrasound scan, with a 7.5MHz probe showed the right breast was non tender on probing. There was a well circumscribed, rounded, lobulated, hetergenous mass with a smooth margin (Figure 3). There were no demonstrable axillary lymph nodes bilaterally. The left breast was normal. A final Bi-rads category 4 suspicious mass was diagnosed. A fine needle aspiration biopsy or an ultrasound guided biopsy was recommended. The patient however opted for a right mastectomy. A right mastectomy was done one week after completing all investigations and histopathology of the mastectomy specimen confirmed an invasive lobular carcinoma with an invasive ductal component, Grade II

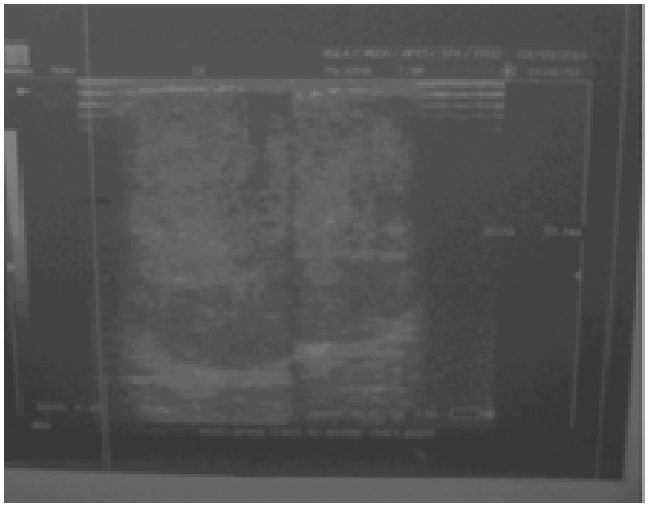

Figure 3. Transverse ultrasound scan of the right breast showing a well defined encapsulated mass of mixed echoes.

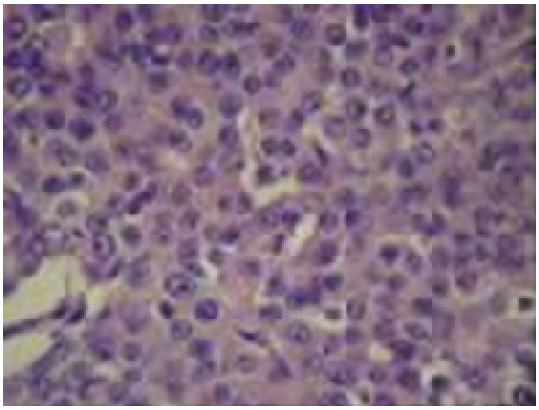

Figure 4A

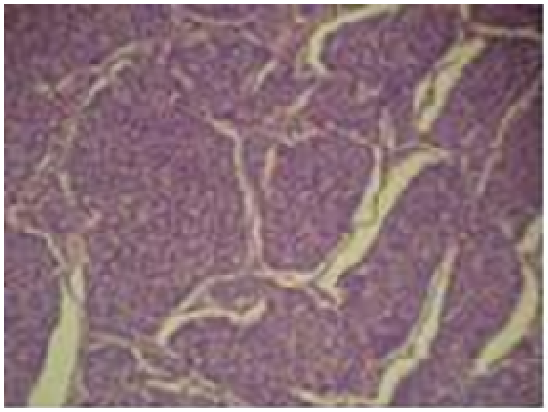

Figure 4B

Figure 4A Histopathology slides showing mammary carcinoma (lobular) x 100 - Lobules of moderately pleomorphic tumour cells and **4B**. mammary carcinoma (x 400) - tumour cells with vesicular nuclei and prominent nucleoli .

(Figures 4A and B).

He was discharged five days post operative and is expected to commence adjuvant therapy (Tamoxifen) after complete healing of the wound.

DISCUSSION

Breast cancer is a global disease with increasing morbidity and mortality, Its incidence continues to rise especially in Sub-Saharan Africa (Adebamowo and Akarolo, 2009 ; Nggada et al., 2008). The increasing use of tobacco, dietary factors, and use of alcohol, physical inactivity and environmental pollution are also important aetiological factors for cancers generally (Adebamowo and Akarolo, 2009). Cancers now show a changing underlying trend and is also being influenced by HIV / AIDS pandemic (Adebamowo and Akarolo, 2009). In Nigeria, breast cancer is currently the most common malignancy (Nggada et al., 2008).

Male breast cancer is a rare disease which has been shown to peak at about 71 years of age, (Fentiman et al., 2006; Giordano et al., 2002; Sabiston and Lyerly, 1997; Doherty and Way, 2006). They often present late in developing countries due to the poor level of awareness and therefore have a poor prognosis,(Dogo el al., 2006; Kidmas et al ., 2005). According to Giordano et al. (2002), the median age at diagnosis is 68 years compared to 63 years in females, (Doherty and Way (2006), Kidmas et al., 2005). In their study, Dogo el al. (2006) and Nggada et al., (2008) claimed that the peak incidence of male breast cancer is 40-49 years and are well advanced at presentation. The patient in this study presented at a younger age (58 years) than suggested by (Fentiman et al., 2006; Giordano et al., 2002; Sabiston and Lyerly, 1997; Doherty and Way, 2006); but later than

that suggested by Dogo et al (2006) . Dogo et al.(2006), in North eastern Nigeria also found that male breast cancer constitutes 3.7% of all breast cancers seen in their hospital with a male to female ratio of 1:26 while it accounts for 8.6% in Jos with a ratio of 1:10.6, Kidmas et al., (2005). Nggada et al. (2008) also found a male to female ratio of 1:20.

Five hundred new cases of male breast cancer are diagnosed in the United States yearly, Giordano et al. (2002).

Male breast cancer accounts for 0.8 - 1% of all breast cancer cases in most western countries, though its incidence has increased over the past 25 years (Giordano et al., 2002; Gomez-Raposo et al., 2010; Dogo el al., 2006; Kidmas et al.2005). Contrary to the findings by Dogo et al.(2006) whose patients presented 12 months after onset of symptoms and Kidmas et al.(2005) whose patients presented 6 months after onset, the patient being discussed presented 9 months after onset of lesion.

In Tanzania, 6% of male breast cancers have been reported and higher proportions have been reported in central Africa (Giordano et al., 2002). In Oshogbo, South Western Nigeria 8.5% of male breast cancer was reported in year 2009 (Oguntola et al., 2009).

There is a high incidence of breast cancer in Bantu men which has been attributed to failure of oestrogen inactivation by liver damage associated with liver disease, (Sabiston and Lyerly, 1997).

High temperature environments and exhaust fumes have been implicated as occupational risks in cancer of the breast in men, Fentiman et al. (2006). This could be considered in this patient because he was a car mechanic. Testicular disease, benign breast conditions, increasing age, Jewish ancestry and family history, (Fentiman et al., 2006; Giordano et al., 2002) have been implicated as risk factors for breast cancer in men. Electromagnetic fields have however not been said to constitute a risk factor, Giordano et al. (2002). Other risk factors include, gonadal dysfunction, obesity, excessive alcohol or exposure to radiation, nipple discharge, breast cysts, history of breast trauma, (Fentiman et al., 2006; Giordano et al., 2002). A positive family history of cancer and being a known patient of gastrointestinal cancer are significant factors for breast cancer in this case.

Gynaecomastia is not considered a significant risk factor, (Fentiman et al., 2006; Giordano et al., 2002). However, clinical gynaecomastia has been reported in 6-38% of cases of breast cancer in men, Giordano et al. (2002). An increased risk has also been found in patients with undescended testes, congenital inguinal hernia, orchidectomy, orchitis, testicular injury, infertility and in men with prostate cancer, (Giordano et al., 2002; Doherty and Way, 2006).

Klinefelter syndrome is the strongest risk factor for developing male breast cancer as it leads to hyperoestrogenization, (Fentiman et al., 2006; Gomez-Raposo et al., 2010). Approximately 4-20% of men with breast cancer have been unexpectedly found to have this syndrome which affects only 0.1% of the general population.

When a man presents with a breast mass, the primary differential diagnosis is gynaecomastia, to exclude carcinoma, Giordano et al. (2002). The small size of the male breast allows easy palpation of most masses, Giordano et al. (2002). Furthermore, the pectoralis muscle is often involved in male breast cancer because of the scanty breast tissue, (Sabiston and Lyerly, 1997). However it was not involved in this patient.

Mammography may be useful in differentiating malignant from benign masses, Giordano et al. (2002). Carcinoma of the breast is often eccentric with irregular spiculated margins on mammograms, Giordano et al. (2002), although this patient's mass did not have a spiculated margin.

Unlike the increasing incidence of breast cancer in women, the incidence has remained stable in men over the past four decades, Giordano et al. (2002). Breast cancer in men as in women may be hormonally driven because many of its risk factors involve abnormalities in oestrogen and androgen balance, Giordano et al. (2002).

It is similar in men and women; however, in men, it is frequently hormone receptor positive and may be more sensitive to hormonal therapy, Giordano et al. (2002). The breasts share certain characteristics in both genders, however familial cases usually have BRCA 2 rather than BRCA I mutations in male breast cancer, (Fentiman et al., 2006; Gomez-Raposo et al., 2010).

Men are usually diagnosed at an older age and present at a later stage than women, with lower overall survival rate (Giordano et al., 2006; Gomez-Raposo et al., 2010; Dogo el al., 2006; Kidmas et al ., 2005). In women, the breast cancer susceptible genes BRCA1 and BRCA2 are thought to account for most hereditary breast cancers. Mutations in these genes cause a 40-70% risk of developing breast cancer by age 70 years, Giordano et al. (2002). BRCA2 mutations predispose men to breast cancer and may account for 4-14% of all cases, (Giordano et al., 2002; Doherty and Way, 2006). Family history of breast cancer in female relatives has also been shown to be an important predisposing factor, Giordano et al. (2002). Approximately 15-20% of male patients with breast cancer have a positive family history, Giordano et al. (2002). The patient in this report did not have a family history of breast cancer though he had history of other forms of cancer in his family. The risk increases with increasing numbers of first degree relatives affected and with young age at diagnosis in affected relatives, (Giordano et al., 2002; Doherty and Way, 2006).

Gupta found that 84% of male breast cancers contain

oestrogen receptors, (Sabiston and Lyerly, 1997). Pathology data on male breast cancer reviewed by Giordano et al. (2002). showed that 81% of tumors were oestrogen receptor positive while 74% were progesterone receptor positive and 37% overexpressed c-erbB-2, Giordano et al. (2002). The immune receptor status of the mastectomy specimen and genetic studies could not be done in this patient because the facilities were not readily available.

A study conducted in Toronto showed that oestrogen receptor positivity predicted better overall survival in univariate analysis, which became no more significant when adjusted for age, tumour size, lymph node status and type of therapy, Giordano et al. (2002). However, in Wisconsin, men with hormone receptor positive tumours had improved overall survival even after adjustment for tumour stage and axillary lymph node status, Giordano et al. (2002).

Prognosis of male breast cancer depends on tumour size, histological grade and lymph node status, Giordano et al. (2002). It is worse in men than in women, (Doherty and Way, 2006), though Gomez-Raposo et al. (2010) claim that the outcome of the disease for male and female are similar when survival is adjusted for age of diagnosis and stage of the disease. Lymph node involvement is the most important negative prognostic factor for breast carcinoma in men, (Giordano et al., 2002; Sabiston and Lyerly, 1997). There was no lymph node elicited in the patient presented. Guinee and colleagues reported 5 year survival rate of 90% for histological node negative disease as compared to 65% for node positive disease, Giordano et al. (2002).

Tumour size has also been shown to be a significant prognostic factor in breast cancer in men. High histologic grade is also associated with decreased survival rates, Giordano et al. (2002). The patient presented had a histological grade II lesion. Survival is similar to that of breast cancer in women when patient is matched for age and stage, Giordano et al. (2002).

Approximately 85% of men with breast cancer present with a painless subareolar mass; as did the patient in this report and more than 40% of patients have stage 111 or 1V disease, (Fentiman et al., 2006; Giordano et al., 2002; Doherty and Way, 2006; Gomez-Raposo et al., 2010; Kidman et al.,2000). Male patients commonly present with nipple retraction or inversion, local pain, ulceration, nipple discharge and bleeding, (Fentiman et al., 2006; Giordano et al., 2002; Doherty and Way, 2006; Gomez-Raposo et al., 2010). Nipple discharge is an uncommon presentation for breast cancer in men, but it is an ominous finding associated with carcinoma in nearly 75% of cases, (Doherty and Way, 2006). The patient presented had no nipple discharge. The rate of nipple involvement is 40-50%, probably because of the sparse breast tissue and central location of most tumours, Giordano et al. (2002). However the tumour in this patient was in the lower outer quadrant. Male breast cancer has a slight predilection for the left breast with a left to right ratio of 1.07:1, Giordano et al. (2002). As reported by Kidmas et al., (2005) in their study, more lesions were seen in the right than the left breast as was seen in this patient. Most patients present with more than one sign and symptom; however, bilateral breast disease is rare, Giordano et al. (2002).

As was found in this patient, approximately 90%, of all breast tumours in men are invasive carcinoma, (Giordano et al.,2002; Kidmas et al., 2005, Nggada et al., 2008), whilst almost all non invasive cancers are ductal carcinoma in situ, Giordano et al. (2002). Lobular carcinoma-in-situ is rare because of the absence of terminal lobules in the normal male breast, Giordano et al. (2002). In men, the predominant histologic subtypes of invasive carcinoma are infiltrating ductal carcinoma which accounts for more than 80% of all tumours and papillary carcinoma which makes up 5% of infiltrating carcinomas, (Giordano et al., 2002; Sabiston and Lyerly, 1997).

Lobular carcinoma in situ is extremely rare, Giordano et al. (2002). It represents only about 1% of invasive diseases, (Giordano et al., 2002; Sabiston and Lyerly, 1997). The patient under review had an invasive lobular carcinoma with a ductal component.

Male breast cancer is treated by surgery, mastectomy with axillary clearance or sentinel node biopsy, (Fentiman et al.,2006; Gomez-Raposo et al., 2010). If the pectoralis muscle is involved, radical mastectomy is done, (Sabiston and Lyerly, 1997). Modified radical mastectomy with removal of affected part of the muscle could also be done, (Sabiston and Lyerly, 1997; Doherty and Way, 2006). With the locally aggressive tumours, postoperative radiation therapy is applied, (Sabiston and Lyerly, 1997).

The indications for radiotherapy and chemotherapy in the management of male breast cancer are similar to female breast cancer, (Fentiman et al.,2006; Gomez-Raposo et al., 2010). If the disease has metastasized, hormonal therapy is the main treatment, though chemotherapy is also palliative, (Fentiman et al.,2006; Gomez-Raposo et al., 2010).

Adjuvant hormonal therapy and chemotherapy are recommended for men, using the same guidelines as for women, Giordano et al. (2002). In men, hormonal therapy is the primary treatment for metastatic disease while chemotherapy should be reserved for hormone refractory disease, Giordano et al. (2002). Tamoxifen is the standard adjuvant therapy because 90% of the tumors are hormonal receptor positive, (Fentiman et al.,2006; Gomez-Raposo et al., 2010).

Conclusion

More attention should be paid to improving awareness about breast masses in both genders. The need to improve information, access to health-care and support for male breast cancer patients through National

initiatives cannot be overemphasized.

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