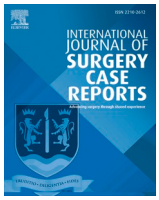
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Case report



Invasive ductal carcinoma of breast in a 73-year old male: A rare case report and literature review

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ABSTRACT

Introduction and importance: Male breast cancers despite being similar to female breast cancers in various aspects; however, they have important distinctive characteristics such as molecular biology, increased tendency for axillary lymph node metastasis and late age at presentation.
Presentation of case: We present the case of a 73-year old indigenous African male who had a 3-year history of right breast swelling which was associated with episodes of pain and tenderness. The assigned clinical stage for the patient was T2aNoMo. The mass was histologically confirmed to be invasive ductal carcinoma, not specified type (NST) without axillary lymph node involvement or distant metastasis. Immunohistochemistry also showed positive results for ER and PR hormonal receptors but negative for HER2.
Clinical discussion: Considering the rarity nature of male breast cancers, this contributes to lack of evidence of the specific treatment approaches despite the noticeable difference in clinical presentation and even biological characteristics of male breast cancers, which are more likely to contribute to poor prognosis.
Conclusion: The prevalence of male breast cancers has been reported to be less than 1 % of all male cancers. This contributes to the lack of analytical large studies that address the comprehensive data regarding the clinical outcomes of breast cancer among men and their predictors. Therefore, having prospective multicenter studies in future would help in providing high level of evidence on prognosis.

1. Introduction

Male breast cancers are very rare which account for less than 1 % of all male cancers and are even rarer in developed countries with only 0.6 % for breast cancer among males, however, the incidence of male breast cancers in sub-Saharan Africa is significantly high with incidence spanning between 15 % and 16 % [1]. The frequency of occurrence of male breast cancers is approximately 2.4 % in comparison to that of female breast cancers [2]. Also, male breast cancers are associated with high expression of ER and PR hormonal breast markers, increased chance of metastasis to the axillary lymph nodes, and late presentation [3]. Lack of awareness and knowledge regarding development of male breast cancers contributes to the increased incidence of male breast cancers in most developing countries particularly in sub-Saharan Africa where the incidence of male breast cancers is significantly high [4]. Long-standing breast lesions in males should always not be ignored as it was in the present patient, which can cause delay of diagnosis and contribute to poor prognosis.

In this report, we describe a male patient who was diagnosed with infiltrating ductal carcinoma, not specified type (NST) without ipsilateral axillary lymph node metastasis. This work has been reported in line with the SCARE criteria [5].

2. Presentation of case

We present the case of a 73-year old indigenous African male with a 3-year history of a right breast swelling which was associated with on and off episodes of pain. For the period of the 3 years, the swelling did not significantly increase in size to make the patient worry. His past medical history includes use of anti-cocks for pulmonary tuberculosis

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which was diagnosed four years ago. However, his family and genetic histories were uneventful. On physical examination, he was moderately wasted, not jaundiced, afebrile, pale and he was supported while walking due to body weakness. Examination of the right breast revealed a firm fixed nodular mass almost at 12:00 o'clock and the skin around the areolar region was ulcerated (Fig. 1) and the ulceration had involved the nipple with retraction of the nipple. Upon palpation of both axillary regions, there were no palpable enlarged lymph nodes.

Ultrasound of the affected breast showed was done which showed hypoechoic breast mass which measured 3.2 × 2.0 × 1.0 cm and a BIRADS 4 breast lesion which was suspicious of malignancy was found. The contralateral breast was normal. Fine needle aspiration cytology (FNAC) was performed which showed hypercellular smears with multiple solid clusters with discohesive malignant epithelial cells (Fig. 2) and in some areas, the tumor cells were forming ducts without myoepithelial cells in the background. A cytological diagnosis of ductal breast carcinoma was given. Then chest CT scan was done which showed a hypoechoic solid mass which measured 3.4 × 2.1 × 0.9 cm with ill-defined margins, however, the contralateral breast was unremarkable.

A team of surgeons, oncologists and pathologists discussed on the clinical stage of the patient and T2aNoMo was assigned. The patient was planned for mastectomy which was performed by an experienced surgeon with assistance of a medical registrar and a scrub nurse. Under aseptic condition, a skin flap together with inner fibrofatty was raised to enable the mass to be accessible for removal. This was followed by suturing the incision and achieving haemostasis. The patient was prescribed with antibiotics and analgesics and was infused with 2000 l of DNS solution and on his 3rd day postoperatively, he was discharged home.

Macroscopically, the tumor was white-tan and firm in consistency and it was 3.1 cm away from the deep surgical margin. Cut-surface of the tumor revealed a heterogeneous solid tissue. Sections were taken for histological evaluation. The tissue sections showed infiltration by malignant tumor cells forming sheets and nests (Fig. 3a), marked reactive lymphocytes (Fig. 3b), and atypical tumor cells with dense and coarse nuclear chromatin (Fig. 3c). Mitotic figures were about 4/10 HPF, moderate nuclear pleomorphism and decreased tendency to form tubules. Bloom-Richardson grade 2 (moderately differentiated) tumor grade was assigned. The diagnosis of infiltrating ductal carcinoma, not specified type (NST) was histologically confirmed. Immunohistochemistry tests revealed strong intranuclear staining for ER and PR but negative for HER2 antibodies.

After one month, the patient started his chemotherapy regime which he completed the six cycles and during his period of systemic therapy, sometimes he was experiencing severe vomiting and loss of appetite.

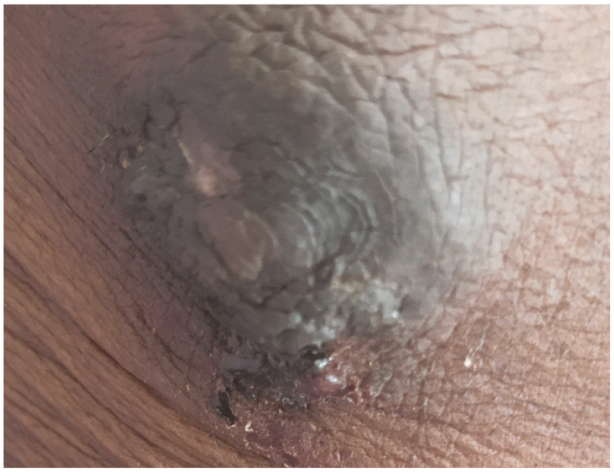


Fig. 1. Clinical image of the patient showing right breast mass with ulceration of the areolar and retraction of the nipple.

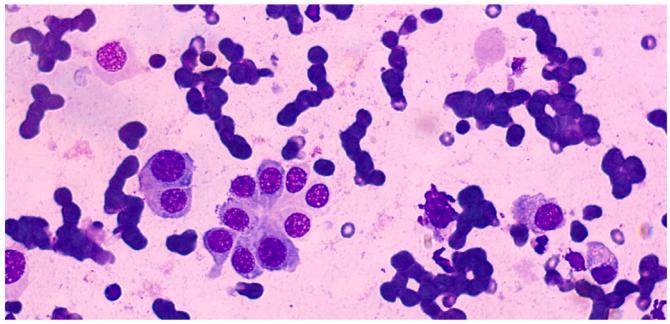


Fig. 2. Photomicrography of the aspiration cytology materials showing solid clusters of malignant ductal cells with marked nuclear pleomorphism, both irregular nuclear chromatin and membrane and abundant amphophilic cytoplasm and there was a tendency to form ducts (Diff-Quick stain, ×400).

After 13 months of his postoperative period, he was clinically evaluated for possible relapse and metastasis using chest CT scan which revealed normal findings of the lungs. Currently, he is fine despite mild episodes of body weakness and moments of loss of appetite.

3. Discussion

Males who are diagnosed with breast cancer usually are of old age with peak age of 67 years [3]. The reason for advanced age at which male breast cancers are diagnosed is unclear, however, male breasts being vestigial and low estrogen levels found among men, both have been suggested for the slow process of development of male breast cancers [6]. Male breast cancers compared to female breast cancers, occur later in life and are associated with advanced clinical stage and majority of them are positive for ER and/or PR hormonal receptors [7]. Lack of awareness and knowledge on breast cancer among men contributes to the delay of prognosis and a large number of men diagnosed with breast cancer, usually present clinically with ulcerating breast lesions as it was the case for the patient described in this work [8,9].

The vast majority of male breast cancers are sporadic in origin. However, inheritance of some risk factors such as BRCA1 and/or BRCA2, PTEN, TP53 and CHEK2 mutations, has been linked to approximately 10 % of male breast cancer [10]. Additionally, it has been found that, males with increased level of estrogen or decreased level of androgen, have a high chance of developing breast cancer and usually such individuals are usually associated with conditions for instance, testicular injury, orchitis, epididymitis, cryptorchidism, Klinefelter syndrome or liver cirrhosis. Liver cirrhosis and liver fibrosis which develop as a complication of chronic schistomiasis, both play a major role in the observable increased incidence of male breast cancers in African [6]. Liver disease increases peripheral estrogen conversion from androgens, therefore, predisposing to male breast cancer [11]. Knowing the fact that liver cirrhosis and schistosomiasis are more prevalent in Uganda, this may explain the reported significantly high prevalence of male breast cancer in Uganda for example, 6.2 % which was reported by Pecorella et al. [6] in a study which was conducted in North Uganda in 2021. Also, in Uganda, there is a high prevalence of chronic viral hepatitis and chronic excess alcohol consumption, these can explain the recorded high prevalence of male breast cancers in Uganda as well as other settings in the sub-Saharan African region for example, Zambia [12] and Ethiopia [13].

Low prevalence of male breast cancers prevents from having large studies that highlight on the survival of male patients with breast cancer. Few studies available in the literature most of them are case series studies that comprise a small number of patients, this affects the strengths of the conclusions drawn in such studies [14]. However, for the few studies reported in the literature it has been shown that, the trend of the survival among males with breast cancers is significantly poorer than that in females with breast cancers. It has been reported

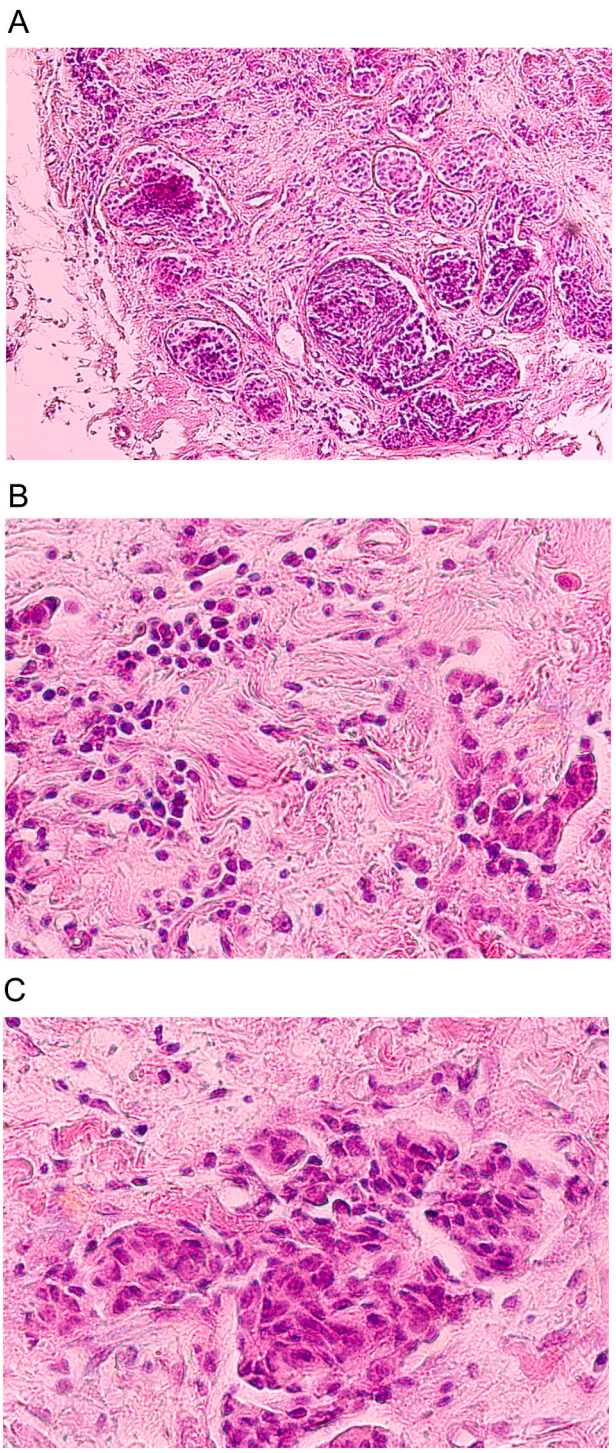


Fig. 3. (a) The section shows stromal infiltration by sheets and nests of tumor cells and marked inflammatory reaction in the stroma (Haematoxylin & Eosin stains, ×100).
(b) The tumor cells are delineated by an inflammatory infiltrate composed of reactive lymphocytes mainly on the left side (Haematoxylin & Eosin stains, ×200).
(c) Photomicrography showing large sheets of hyperchromatic tumor cells with moderate nuclear pleomorphism and dense coarse nuclear chromatin (Haematoxylin & Eosin stains, ×400).

that, male breast cancers have a high rate of presenting with lymph node metastasis, this contributes to shortened survival of the patients. In a study by Herman et al. it was reported that, 55.5 % of men with breast cancers had lymph node metastasis [15]. Another study done by Li C and Li X in China among males with breast cancers, it was found that 46.2 % of the patients had axillary lymph node metastasis [16]. This indicates that male breast cancers are more likely to have poor prognosis and are more likely to have a specific clinical course.

4. Conclusion

Male breast cancers are significantly rare and majority of patients present at advanced age with late presentation of the disease. Axillary lymph node involvement in male breast cancers is common and it contributes to poor prognosis and shortened survival of the patients.

Consent

Written informed consent was obtained from the patient for the publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval

Ethical approval has been exempted by our institution because this is a case report and no new studies or new techniques were carried out.

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Guarantor

James J Yahaya.

CRediT authorship contribution statement

JJY and EDM: writing the draft of the manuscript.
AIN and EO: organization of the manuscript and performing review of the existing literature.
ZSA and JJY: collection of the images and critical revision.
JJY and EDM: final approval of the article.

All authors read and approved the final manuscript.

Declaration of competing interest

All the authors certify that there is no conflict of interest.

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