



International Journal of Case Reports & Short Reviews

Case Report

Infiltrating Duct Carcinoma of Breast in a Young Male Patient - ②

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Submitted: 17 February 2018; **Approved:** 13 April 2018; **Published:** 14 April 2018

Cite this article: Gosavi MS. Infiltrating Duct Carcinoma of Breast in a Young Male Patient. Int J Case Rep Short Rev. 2018;4(2): 020-023.

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ABSTRACT

Breast carcinoma has been considered a female dominated disease, whereas male breast carcinoma is relatively rare accounting for less than 1% of all breast cancers. Cancer of the breast among men is rare, accounting for less than one percent of cancer incidence and mortality in this sex group. We present the case of a 17-year-old boy with infiltrating ductal breast carcinoma.

Keywords: Young Male; Breast Carcinoma

INTRODUCTION

Breast cancer in men is rare, and it accounts for about 1% of all malignant breast neoplasm cases [1,2A]. The American Cancer Society estimates for breast cancer in men in the United States for 2018 are: About 2,550 new cases of invasive breast cancer will be diagnosed. About 480 men will die from breast cancer is about 100 times less common among men than among women. For men, the lifetime risk of getting breast cancer is about 1 in 1,000. The number of breast cancer cases in men relative to the population has been fairly stable over the last 30 years [2A].

Among the histologic types, invasive ductal carcinoma is the most prevalent breast cancer in males, with an incidence varying from 65 to 95% [2B,3,4]. Male breast cancer has unimodal age-frequency distribution with a peak incidence at 71 years old. Conversely, female breast cancer has a bimodal age-frequency distribution with early-onset and late-onset peak incidences at 52 and 72 years old, respectively [5]. This study examined a 17-year-old man without important risk factors who was diagnosed with invasive ductal carcinoma. Although it is rare, there have been instances of breast cancer in younger males [6]. We evaluated the main aspects of the epidemiology of breast neoplasm in men and the best approach for treatment.

CASE PRESENTATION

A 17-year-old male college student, visited my hospital with the chief complaints of nipple discharge, pain and lump in the right chest. The patient was referred to the surgeon. On examination, it was found that the mass was painless, located at the lower inner quadrant of the right breast, firm to hard in consistency and not involving skin. Physical examination revealed palpable lymph nodes in the right axilla. Preliminary biochemical examination revealed the patients Carcino-Embryonic Antigen (CEA) level to be 5 ng/ml (reference value: 0-3.7 ng/ml).

Breast USG, revealed a hypo-echoic and irregular solid lesion measuring 2.1 x 1.2 x 1.5 cm in lower inner quadrant of right breast. Lesion was taller than wider. No evidence of calcification. Multiple (at least 4-5 Right axillary lymphnodes were also noted. Left breast was unremarkable. No supraclavicular or left axillary lymphadenopathy a provisional diagnosis of fibrous malignancy was made. The patient was then referred to the Department of Pathology for Fine-Needle Aspiration Cytology (FNAC) which confirmed the provisional diagnosis of fibrous carcinoma of the breast. There were no distant metastases in chest radiography and abdominal Ultrasonography (USG).

The patient was then referred to the Department of General Surgery where a Modified Radical Mastectomy (MRM) was performed as a curative measure of radical prevention of infiltration and metastasis. The excised tumour was subjected to a second histopathological examination which confirmed the FNAC findings but also revealed

the actual tumor to be of 2.8 x 1.6 x 1.6 cm. None of the lymph nodes dissected from the axilla was metastatic. Furthermore, the carcinoma was of infiltrating ductal type, with free surgical margin, ER/PR positive, and of stage IIA ($T_3N_0M_0$). All examinations were carried out by two independent and experienced pathologists. After the curative surgery, the patient will be receiving methotrexate 50 mg/m², and 5-fluorouracil 500 mg/m² on days 1 and 8, repeated every 28 days for six cycles.

DISCUSSION

Invasive ductal carcinoma in men presents peculiar features. About 42% of breast cancer cases in men are diagnosed in stage III or IV [7]. This is probably because men do not seek medical attention for breast masses as quickly as women. In addition, the tumor is usually closer to the skin in males. Treatment strategies for male breast cancer are not based on data from randomized clinical studies in men and most treatment recommendations are extrapolated from data in women [8].

Men with breast carcinoma have a poor prognosis, especially in the younger age group, because most breast enlargements in young men are dismissed as gynecomastia [9,10]. This potential misdiagnosis can result in an unnecessary delay in treatment. The median age of breast cancer diagnosis in men is approximately 65 years old [11]. Reports of breast cancer in young male patients are rare. Nielsen and Jakobsen described a breast cancer case in a 32-year-old man [12]. More recently, an invasive cancer case was reported in a 30-year-old patient. In 2008, Chang et al described the case of a 16-year-old male with unilateral ductal carcinoma *in situ* and gynecomastia [13]. 15% to 20% breast male cancer patients have a family history of breast cancer [14]. Familial mutation of BRCA plays important role in this cancer, but relations between mutation in breast male cancer in every country is different. In Southern California there are only 4% familial mutation of BRCA in male breast cancer but in Iceland there are 40% mutations [15]. In addition to the very young age of the patient in the present report, this patient did not have a family, hormonal, or genetic history that could justify the high risk for breast cancer. Although gynecomastia has been suggested to be present in 6-38% of breast cancer cases in men, it was not evident in our patient.

Relation between endogenous estrogen and testosterone may increase risk of male breast cancer. Obesity causes imbalance between these two hormones. Men with body mass index higher than 30 kg/m² have a higher risk of breast cancer [16]. Breast male cancer is more often observed in men who are exposure to ionizing radiation, high environmental temperature and chemicals [17,18]. It is fundamental to consider the history of breast tumors in first-degree relatives because that can be an indicator for increased breast cancer risk. Indeed, genetic diseases such as Klinefelter's syndrome and Cowden's disease have been shown to be related to breast cancer in men [1]. Diagnostic mammography in men has good sensitivity of 92-100% and specificity of 90% [19,20]. Mammography is ideal tool



to diagnose male breast cancer and gynecomastia [20]. Ultrasound is a good tool to diagnose small solid breast lesions [20]. Axillary lymph node ultrasound is necessary to make preoperative staging and make decision for neoadjuvant therapy [19,20]. Distinguishing gynecomastia from cancer is an important part of the workup in a male breast lesion.

Gynecomastia

Usually presents as a soft, mobile, tender, subareolar mass lateral and deep margins can be indistinct or blend into surrounding fat majority are bilateral but often asymmetric.

Male Breast Cancer: Often subareolar but eccentric to the nipple can often be well circumscribed [21]. There is no evidence that suggests that all men need breast Magnetic Nuclear Resonance Imaging (MRI). But suspicious MRI lesions in the contralateral breast should be examined. Furthermore, male breast cancer survivors have an increased risk of developing a second primary cancer. The risk of a contralateral breast cancer appears to be higher for men than it is for women [22]. Some studies indicate that men with breast cancer have a 30-fold increased risk of contralateral breast cancer, much greater than the two- to fourfold risk among women with breast cancer [23]. The risk of subsequent contralateral breast cancer was highest for men aged less than 50 years at the time of the first cancer diagnosis, which is consistent with studies of women with breast cancer [24,25].

Oestrogens receptors and progesterone receptors have been



Figure 1: Usg shows a ill defined hetrogenous mass in right lower inner quadrant with minimal vascularity. Multiple right axillary lymphnodes

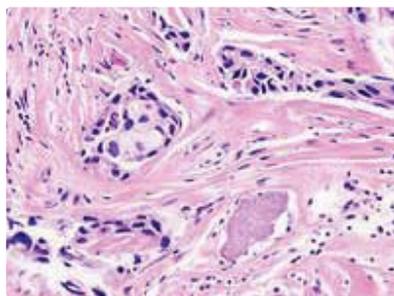


Figure 2: Histological biopsy: invasive ductal carcinoma (hematoxylin-eosin staining).

suggested to play a role in breast cancers in men, and they are present in about 90% and 81% of breast cancers in males, respectively [4]. Furthermore, overexpression of the proto-oncogene HER-2 has been shown to present the worst prognosis for a patient [26]. Other markers that have been recently studied are *p27*, MIB-1 and Bcl-2 genes. Similar to breast cancer cases in women, earlier detection of male breast cancer is correlated with the success of the treatment. Although males have considerably less mammary parenchyma than women, the investigation must be a combination of a clinical exam, mammography, cytology, and percutaneous biopsies [27,28]. The core needle biopsy is important because it enables a definitive diagnosis of invasive breast cancer and the evaluation of estrogen receptors, progesterone receptors, and Her-2 status.

Tamoxifen should still be considered as the optimal adjuvant therapy option for male patients with endocrine responsive disease. The effect regarding rate and overall survival by adjuvant chemotherapy is also far less well studied. Some studies have demonstrated an improved disease-free and overall survival compared with historical controls using adjuvant anthracycline-based therapies [29]. Newer therapies for advanced breast cancers, Drugs called PARP inhibitors can target cancers caused by BRCA mutations. One of these drugs, olaparib, has been helpful in treating breast, ovarian, and prostate cancers that had spread and were resistant to other treatments in studies. Further studies are under way to see if these kinds of drugs can help patients without BRCA mutations. Bevacizumab (Avastin) is an anti-angiogenesis drug that once showed promise in treating metastatic breast cancer. Although bevacizumab turned out to not be very helpful in the treatment of breast cancer, the anti-angiogenesis approach might still prove useful in breast cancer treatment [30].

Because of the high probability of an indefinite period of infertility following chemotherapy, sperm cryopreservation should be recommended for all young patients with cancer prior to the start of chemotherapy. Although treatment and survival represent the primary goals of the clinical approach towards breast cancer patients, the quality of life after treatment, including the possibility of becoming fathers, requires consideration. In addition, sperm cryopreservation is another hope that encourages young patients with cancer during and after treatment [31]. Breast cancer therapeutics in men must be based on certain parameters, such as tumor size, the presence of estrogen and progesterone receptors, HER-2 expression, and the association with other diseases. Men diagnosed with breast cancer present risk factors, such as chronic hepatopathies, that are directly associated with the neoplasm. In addition, men diagnosed with breast cancer are generally older and present other comorbidities. Due to the smaller size of male mammary parenchyma, the elected surgical treatment is modified radical mastectomy.

CONCLUSION

Our study showed the occurrence of male breast cancer in a young 17-year-old boy

1. Male breast cancer is a rare disease.
2. Male breast cancer has been associated with worse prognosis than female breast cancer.
3. Pain, breast mass and nipple changes are the most common symptoms of male breast cancer.
4. Ultrasound and mammography are good tools to diagnose small solid breast lesions.



5. Screening for male breast carcinoma is not practical due to the small percentage of involved patients
6. Stage and treatment of male breast cancer is based on the same principles that guide the treatment of female breast cancer
7. Due to lack of self-awareness, these patients usually present late with delayed diagnosis, and larger tumor size resulting in a higher morbidity and mortality

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