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Synchronous Bilateral Male Breast Cancer: A Case Report and Literature Review

Lyafi Yasmine[1,*], Benrahhal Sanaa[1], Moutaabide Rihab[1], Hachimi Dounia[1], Bencherifi Younes[2], Benhassou Mustapha[2], Ennachit Mohamed[2] and Elkarroumi mohamed[2]

[1]Resident Physician, Department of Gynecology and Obstetrics, at Ibn Rochd University Hospital, Casablanca, Morocco

[2]Professor in the Department of Gynecology and Obstetrics at the Ibn Rochd University Hospital in Casablanca, Morocco

[*]**Corresponding author:** Lyafi Yasmine, Resident Physician, Department of Gynecology and Obstetrics, Ibn Rochd University Hospital, Casablanca, Morocco

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Abstract

Male breast cancer is an uncommon condition, representing less than 1% of all cancers in men and around 1% of all breast cancer cases. The majority of the data on male breast cancer comes from retrospective studies, as there are no randomized trials dedicated specifically to this population. Consequently, treatment guidelines are often adapted from research on female breast cancer. While male breast cancer shares many similarities with female breast cancer, there are unique aspects that require special attention. We present the case of a 67-year-old man, with no history of familial breast cancer, gynecomastia, solid organ tumors or hormonal medication who presented with bilateral breast mass. Bilateral mastectomy with left axillary lymph node dissection and right sentinel lymph node were performed. The final histopathological examination confirmed the initial biopsy diagnosis, with the tumors classified Left breast: T3N2M0 and T1N0M0 in right breast according to the TNM breast cancer staging system with an immunohistochemical Luminal B profile, HER 2negative. The goal of this study is to raise awareness of breast cancer in men, aiming to promote early diagnosis and ultimately improve prognosis.

Keywords: Male Breast Cancer, Bilateral, Tumor

Abbreviations: SBR: Scarff-Bloomrichardson, IHC: Immunohistochemical, TAP: Thoraco-Abdominopelvic

Introduction

Male breast cancer is an uncommon condition, representing less than 1% of all cancers in men and only about 1% of all breast cancer cases. Most of the available information on male breast cancer comes from retrospective studies, as no randomized trials have been conducted specifically for this group. As a result, treatment guidelines are often based on findings from studies in women. Although male breast cancer shares many similarities with female breast cancer, there are unique characteristics that must be recognized.

Observation

We present the case of a A 67-year-old male, with no personal or family history of breast cancer, gynecomastia, hormonal therapy, or solid organ malignancies, presented with a

progressive left breast lesion evolving over five years. Initially asymptomatic, the lesion was neglected until a noticeable increase in size prompted a gynecological consultation.

Clinical Examination found:

- **Left breast:** A polylobulated, erythematous nodular lesion with ulceration and crusting, firm and infiltrative, fixed to the underlying structures, involving 90% of the nipple-areolar complex. The lesion was associated with four additional erythematous, indurated nodules, each measuring 0.5cm. A 1.5cm left axillary lymphadenopathy was detected, fixed to both superficial and deep planes, and non-tender **(Figure 1)**.
- **Right breast:** A 1 × 1cm mass in the internal para-areolar region, mobile relative to both superficial and deep planes, with no signs of inflammation, palpable axillary lymphadenopathy, or nipple discharge **(Figure 1)**.

Bilateral breast ultrasound revealed:

- **Left breast:** A retroareolar hypoechoic lesion measuring 34 × 27mm with irregular, macrolobulated margins and peripheral spiculations. Color Doppler imaging demonstrated moderate internal vascularity with irregular blood flow. The lesion was in direct contact with the pectoralis major muscle, with loss of the normal cleavage plane. Multiple ipsilateral and contralateral breast nodules (10 in total) with similar characteristics were noted, along with multiple suspicious left axillary lymphadenopathies.
- **Right breast:** A heterogeneous solid mass measuring 15 × 20mm with irregular margins, located in the retroareolar region, with no evidence of pathological lymphadenopathy.

Tru-cut biopsy revealed:

- **Left breast:** Infiltrating carcinoma of no special type (NST), Scarff-BloomRichardson (SBR) grade 2, with immunohistochemical (IHC) analysis showing a Luminal B profile (ER 100%, PR 100%, Ki67 30%, HER2-negative).
- **Right breast:** Infiltrating carcinoma of no special type (NST), SBR grade 2, with IHC showing a Luminal B profile (ER 80%, PR 60%, Ki67 25%, HER2-negative).

A thoraco-abdominopelvic (TAP) CT scan and bone scintigraphy showed no evidence of distant metastases (M0). The case was discussed in a multidisciplinary tumor board meeting, and the decision was made to proceed with bilateral mastectomy with left axillary lymph node dissection and right sentinel lymph node biopsy (0 N+ / 3 N) **(Figure s 2,3,4)**.

The final histopathological examination confirmed the diagnosis with the following TNM classification:

- Left breast: T3N2M0
- Right breast: T1N0M0

Both tumors exhibited a Luminal B, HER2-negative IHC profile. Postoperative management included adjuvant chemotherapy, radiotherapy, and endocrine therapy.

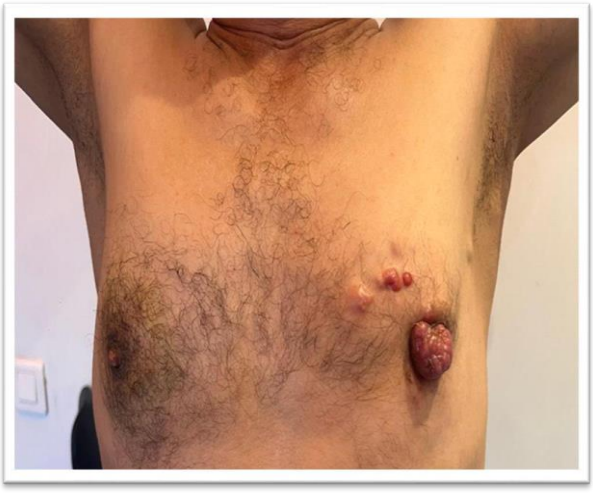

Figure 1: clinical examination of the patient

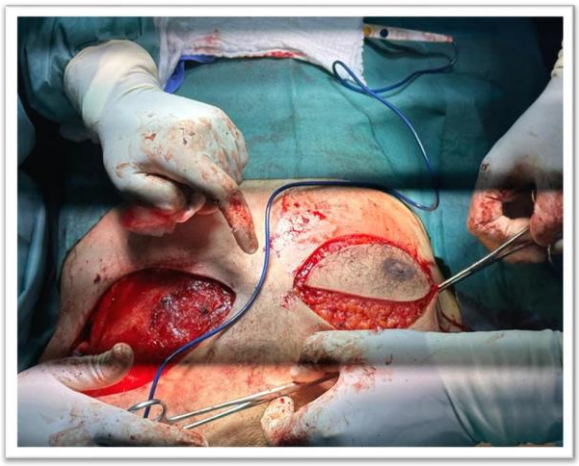

Figure 2: intra-operative mastectomy

Figure 3: Bilateral mastectomy performed

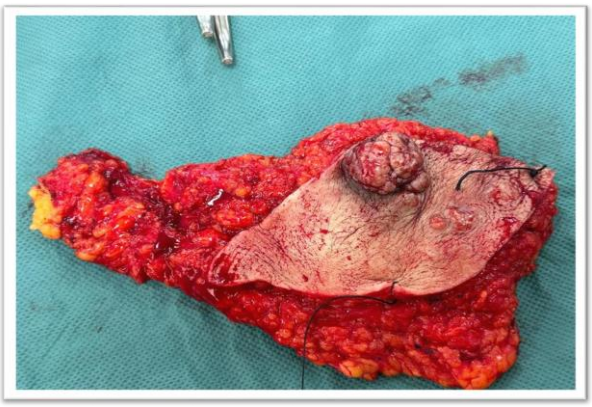

Figure 4: left mastectomy surgical specimen

Discussion

Breast cancer in males is rare, accounting for about 1% of breast cancers overall **[1]**. Bilateral synchronous breast cancer presentation is extremely rare, with an incidence of 1.5%-2% of all male breast cancers **[2]**. Synchronous bilateral involvement is estimated to be more uncommon than metachronous bilateral involvement, and the former accounts for approximately one-third of all bilateral breast cancers **[3]**.

The exact cause of breast cancer in men is not fully understood, but hormone levels are thought to play a role. Risk factors for male breast cancer include testicular conditions such as undescended testes, congenital inguinal hernia, orchiectomy, and orchitis **[3]**, as well as conditions that increase estrogen levels, including advanced age, Klinefelter syndrome which increases the risk by 50 times, and liver dysfunction **[4,5]**. Radiation therapy to the chest in

men also raises the risk of developing breast cancer **[5]**. Men with a family history of breast cancer are 2.5 times more likely to develop it than those without such a history. Male breast cancer is more often associated with germline mutations in BRCA2 than in BRCA1.Gynecomastia is not considered a risk factor for breast cancer in men **[3]**.

The most common sign of breast cancer in men is a firm, non-tender mass located in the subareolar area. Nipple discharge is more common in malignant rather than benign disease in men **[6]**.

The first step in the evaluation of a suspicious breast mass in a man is mammography. The sensitivity and specificity of mammography for the diagnosis of male breast cancer is 92% and 90%, respectively **[7]**.

Usually, mammography can distinguish between malignancy and gynecomastia. Radiographic features suggestive of malignancy include eccentric to the nipple, and spiculated margins **[8]**.

Microcalcifications are less common in male than in female breast cancer. Ultrasonography can also be a useful adjunct and provide information regarding nodal involvement **[9]**. On ultrasonography, invasive cancers are typically solid, and all solid lesions require biopsy. Any suspicious mass requires biopsy to confirm the diagnosis. Estrogen receptor, progesterone receptor, and Her2-neu status should be evaluated in every patient. Core biopsy is preferred because it enables a definitive diagnosis of invasive breast cancer to be made. In males, these tumours show a large oestrogen receptor (80–90%) and progesterone receptor (73–81%) expression, even higher than in women (75% and 65%, respectively). Some studies have shown a lower HER-2 expression in men (2–15%) than in women (18–20%), although the data are inconsistent **[10,11]**. Standard treatment is modified radical mastectomy with axillary lymph node dissection or sentinel node lymph biopsy. Historically, radical mastectomy was performed, but retrospective studies suggest the equivalence of these two surgical procedures in terms of local recurrence and survival.57–59 No randomized studies have been conducted in men. However, larger studies from female breast cancer patients also support the use of modified radical mastectomy over radical mastectomy.58 The only exception is cases that have extensive chest wall muscle involvement may benefit from a radical mastectomy. Breast conserving therapy is not usually considered in men with early-stage disease, in contrast with women, because of the lack of breast tissue and the central location of most tumors **[12,13,14]**.

Male breast cancers have high rates of hormone-receptor expression. Approximately 90% of male breast cancer express the estrogen receptor, and 81% express the progesterone receptor **[15]**.

Men with tumors measuring 2–5cm have a 40% higher-risk of death than men with tumors <2cm. Similarly, men with lymph node involvement have a 50% higher risk of death than those without lymph node involvement. Furthermore, an increasing number of involved axillary lymph nodes is associated with a poorer prognosis **[16]**.

Conclusion

We are encountering a rare case of breast cancer in men: it is synchronous, bilateral, and occurs in the absence of any family history or known risk factors, making its publication significant.

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