

Bilateral Synchronous Breast Cancer in a Male

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Abstract

Breast cancer in males is rare, accounting for less than 1% of all cases. Bilateral male breast cancer is reported to occur in fewer than 2% of all the diagnosed cases of male breast cancer, and synchronous tumors are exceedingly rare. The authors report a case of male breast cancer that is bilateral and synchronous, and review the literature on male breast cancer.

Key Words: Breast cancer, male, bilateral, synchronous, prognosis, review.

Case Report

A 71-YEAR-OLD AFRICAN-AMERICAN MALE accidentally discovered a mass in his left breast. Family history was negative for breast cancer and his medical history was unremarkable. There was no history of alcohol use and he was not taking any medications. On physical examination of the left breast a hard, poorly defined mass with a diameter of 2 cm was noted. It was fixed to the overlying nipple-areola complex and caused nipple retraction. Examination of the right breast revealed a hard, fixed nodule in the retroareolar region, measuring about 1.5 cm in diameter. Both axillae and supraclavicular fossae were free of palpable lymphadenopathy, and there was no evidence of abdominal organomegaly. Laboratory values were within normal limits. Chest X-ray was normal. Mammography was consistent with a dominant 2 x 2 cm left retroareolar mass with spiculated borders, breast imaging - reporting and data system (BI-RADS) category 4. No discrete mass was mammographically identifiable on the right.

Excisional biopsies of both lesions were positive for carcinoma. The left-sided tumor proved to

be a 2 cm infiltrating ductal cell carcinoma (see Figs. 1 and 2). The right breast lesion revealed a 1.2 cm moderately differentiated intraductal carcinoma (see Figs. 3 and 4). Hormonal receptors were strongly positive on both sides. To achieve adequate margins around these relatively large lesions, the patient underwent bilateral modified radical mastectomies. The sentinel node technique was not used, because the masses were moderately differentiated and there was a strong suspicion that the nodes would be involved. On final pathology, however, the lymph nodes in both axillae were free of metastasis. The patient's postoperative course was uneventful. Subsequently, he received six

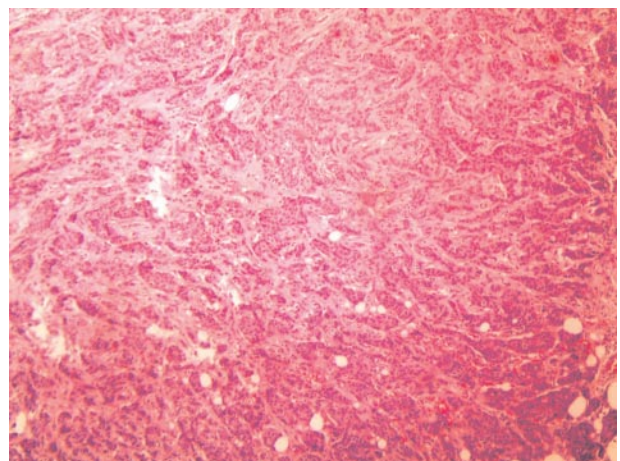


Fig 1. Left breast: infiltrating ductal carcinoma (H&E stain $\times 100$).

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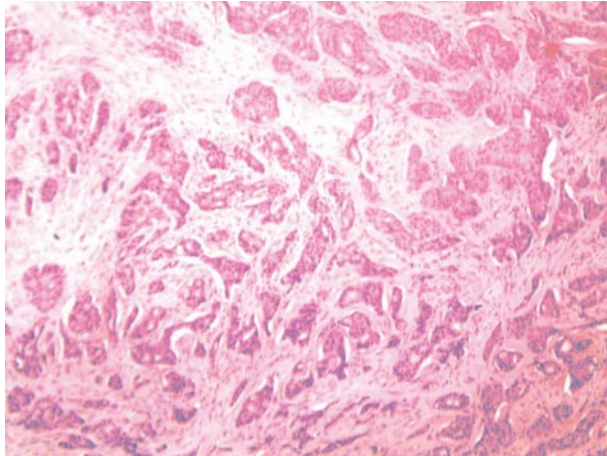


Fig 2. Left breast, higher magnification: infiltrating ductal carcinoma (H&E stain $\times 200$).

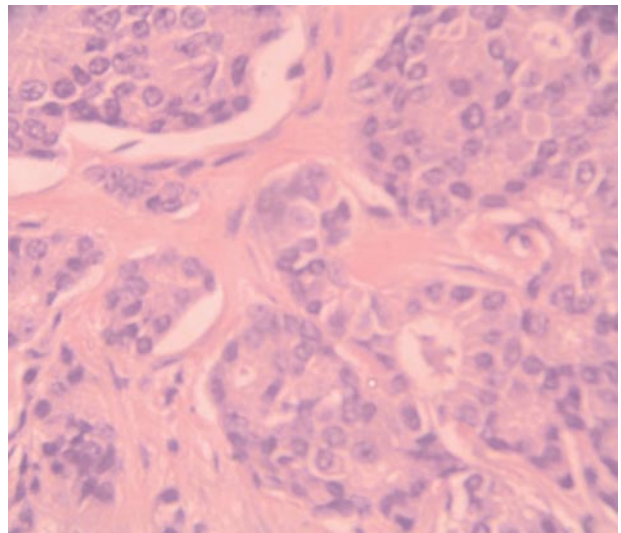


Fig 4. Right breast, higher magnification: intraductal carcinoma (H&E stain $\times 400$).

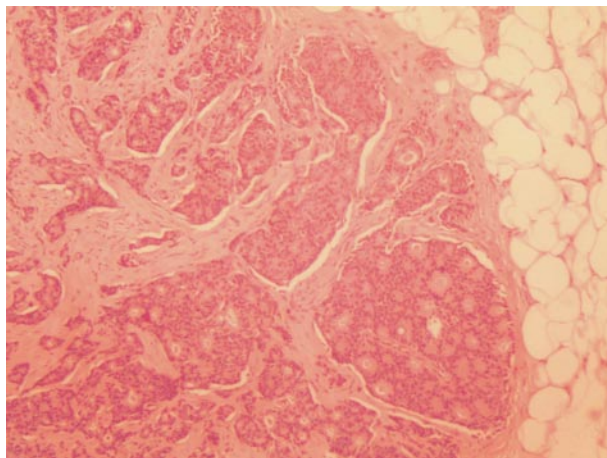


Fig 3. Right breast: invasive intraductal carcinoma (H&E stain $\times 100$).

months of CMF (cyclophosphamide, methotrexate, 5-fluorouracil), followed by tamoxifen. After 17 months of follow-up, the patient was still alive, with no evidence of recurrence.

Discussion

Breast cancer occurs infrequently in males: of the 212,600 new cases projected to be diagnosed in the U.S. during 2003, only 1,300, or less than 1%, were expected to affect men. For the same year, deaths from the disease were forecasted at 40,200 women and 400 men (1). Five-year survival rates for the period 1995–2000, however, remained lower for men (81.1%) than for women (87.7%) (2). The mean age of detection in males is between 60 and 66 (3), which is 6–10 years later than the average age for women.

Crichlow reported that synchronous bilateral cancer occurs in 1.4% of male cases (4). Studies have shown that bilateral breast cancer has a worse prognosis than unilateral breast cancer, with a higher rate of distant metastasis and a lower disease-free survival rate (5).

According to Warren and Gates, three criteria must be satisfied in order to classify two or more tumors as synchronous primary malignancies (6):

1. Each tumor must be malignant
2. Each tumor must be distinct, i.e., different in its histological type from the other
3. Neither tumor can originate with metastasis from another tumor

The etiology of breast cancer in males remains elusive, but several predisposing factors have been proposed:

1. Feminization resulting from hyperestrogenism, either genetic or exogenous (7)
2. Hyperestrogenism secondary to liver dysfunction, as seen in patients with cirrhosis, schistosomiasis, or malnutrition (4)
3. Suppression of testicular function, as in Klinefelter's syndrome (8), or as a sequel of orchitis, testicular injury, undescended testis, or occupational exposure to heat or toxic chemicals (9)
4. Gynecomastia (10)
5. Exposure to ionizing radiations (10)
6. Exposure to electromagnetic fields for more than 30 years (11)

7. Hyperprolactinemia secondary to head trauma or to ingestion of prolactin-elevating drugs (12)
8. Race, religion, and geography (13)

Familial risk is reported in a few clusters of male breast cancers, but the information remains limited. With the recent availability of BRCA1 and BRCA2 genetic testing, it has been found that 10% of men with a mutation in the BRCA2 gene develop breast cancer, a risk not observed in men with a BRCA1 mutation. Similar risks are found in women with BRCA2 (14).

The discovery linking the genes BRCA1 and 2 to familial breast cancer is beginning to play an important role in the clinical practice of geneticists and physicians. The availability of genetic tests for BRCA gene mutations has prompted cancer geneticists to provide information about genetic risk, and to assess many women with a personal or family history of breast or ovarian cancer, informing them of preventive measures. These measures consist mainly of breast self-examination, mammography screening, chemoprevention, and prophylactic surgery (mastectomy, oophorectomy) (15).

The most common finding in male breast cancer is a mass. There is no screening program designed for males, so their cancers are usually diagnosed at a later stage than those found in women. The masses must be differentiated from gynecomastia. The cancerous masses are typically unilateral, hard, non-tender and poorly defined, and they are located beneath or adjacent to the nipple areola complex. The masses seen in patients with gynecomastia are usually bilateral, tender, well defined and just beneath the nipple. Other frequent symptoms of male breast cancer are nipple retraction, edema, ulceration and nipple discharge (4). Bloody nipple discharge is associated with 75% of the cancers (16). Other signs may involve skin changes such as ulceration, edema, erythema, retraction or presence of nodules and axillary lymphadenopathy (16). Mammographically, the primary characteristic is the presence of a mass, usually lobulated, spiculated, or ill defined, characteristically eccentric to the nipple. Micro-calcifications can occur, usually in the presence of a mass.

Because the natural course of breast cancer appears to be similar in both sexes, its treatment is generally similar, but there are a few differences worth discussing.

In men, modified radical mastectomy is the procedure of choice. Lumpectomy with postoperative radiation is not usually possible for male breast cancer, because the cancers are usually adherent to the pectoralis fascia and the male breast

is small, thus preventing adequate margins. In cases where the cancer extends to the pectoralis muscle, part or all of the muscle should be resected to obtain local regional control. In cases of small lesions with no palpable axillary nodes, the sentinel node procedure can be used (5). Post-mastectomy radiation is reserved for patients with positive lymph nodes or cancer infiltrating the pectoralis muscle (17).

In the absence of sufficiently reliable clinical data and in line with the hypothesis that breast cancer in men and women should behave similarly, adjuvant systemic treatment should follow the guidelines outlined for women. Patients found to have positive lymph nodes should receive CMF or CAF (cyclophosphamide, Adriamycin, 5-fluorouracil), followed by tamoxifen if the hormone receptors are reported to be positive (18). Because most male breast cancers are hormone-receptor positive, hormonal therapy is a mainstay of treatment, and tamoxifen is the first-line choice. Many men, however, develop side effects that force them to abandon tamoxifen administration (19). Since the incidence of male breast cancer is low, there have not been any studies evaluating the role of tamoxifen as prophylaxis in high-risk male patients (20).

Males with breast cancer exhibiting the same TNM (primary tumor, regional lymph nodes, and distant metastasis) stage and receiving the same treatment as a woman have essentially the same prognosis (13). The belief that male breast cancer has a poorer outlook is based on its tendency to be diagnosed at a later and more advanced stage. This delay in diagnosis is a consequence of the very limited public awareness and the absence of screening protocols for male breast cancer. Male breast cancer does, however, occur and patients must become aware of its existence and the importance of seeking surgical attention and evaluation for any lump in their breasts.

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