

Abstract:

Breast cancer is much less common in men than in women. Male patients are older and show more advanced disease at the time of clinical presentation. Furthermore, invasive ductal carcinoma predominates in men >90% of the time, while ductal carcinoma in-situ (DCIS) and lobular carcinomas are less common or rare in comparison with women. Breast cancers that arise in men are more often hormone receptor positive (ER+, PR+) and less often overexpress HER-2. The most common presentation is a painless, firm, sub-areolar mass. Mammography is abnormal in 80-90% of cases and usually differentiates malignancy from gynecomastia. Biopsy is required to confirm the diagnosis and assay for hormone receptors ER, PR and HER-2, both of which influence the treatment selection. The TNM staging system and Nottingham scores are applied to male breast carcinomas as is the case with female breast cancer. Any male patient with a diagnosis of breast cancer should be referred for genetic counseling and BRCA testing because of the strong correlations seen in previous experimental studies.

Epidemiology

Male Breast Cancer (MBC) is rare in contrast to female breast cancer (FBC), which is the second leading cause of death in females (1). In the United States, approximately 2140 new cases of MBC are diagnosed annually, with approximately 450 deaths occurring as a result. This represents less than 0.5% of all cancer related deaths nationwide (2). The median age of onset of MBC is 65-67, approximately 5-10 years later than the median age seen in female breast cancer. Studies show that the incidence has increased 26% over the last 25 years (3).

Risk Factors

Studies have shown several risk factors. These include obesity, low physical activity, gynecomastia, cryptorchidism, Klinefelter syndrome, exposure to radiation, chronic liver disease, schistosomiasis, and a family history of BRCA-1 or BRCA-2 mutations (1).

Differential Diagnosis

The differential diagnosis of a breast mass in a male patient includes gynecomastia, a breast abscess, tumor metastasis from a distant site, and other non-breast tumors such as sarcomas and lipomas.

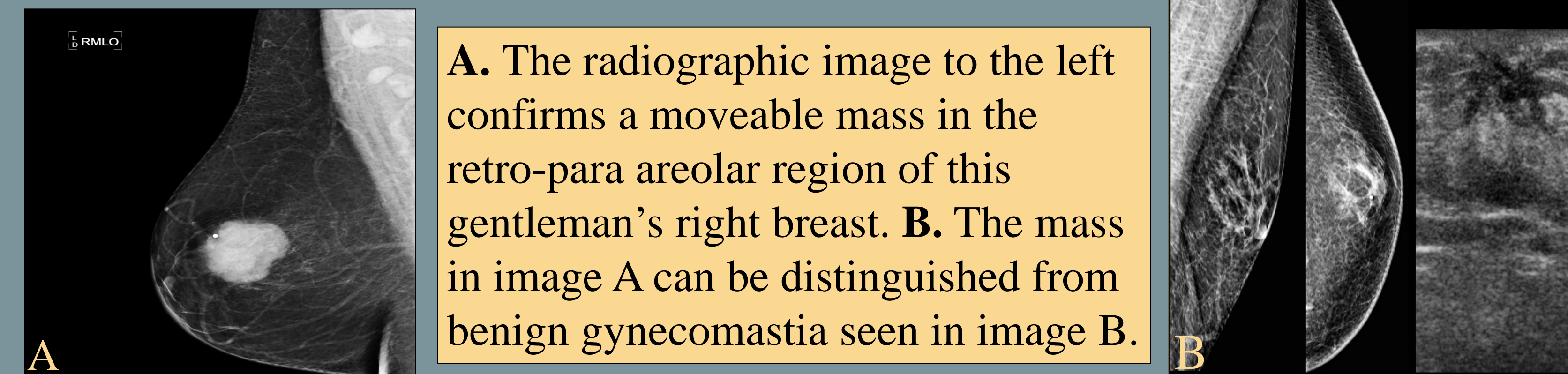
Diagnostic Staging and Evaluation

Breast cancer is staged according to the TNM staging system developed and maintained by the American Joint Committee on Cancer (AJCC) and the Union for International Cancer Control (IUCC). As in women, tumor size (T), regional lymph node involvement (N), and distant metastasis (M) are the most important factors influencing prognosis (4).

In addition, breast cancer is given a histologic grade based on the Nottingham score in which the tumor is graded based on glandular formation, nuclear pleomorphism, and mitotic counts per high powered field. Together, the Nottingham score and the TNM stage are powerful indicators of prognosis (4).

Case Study:

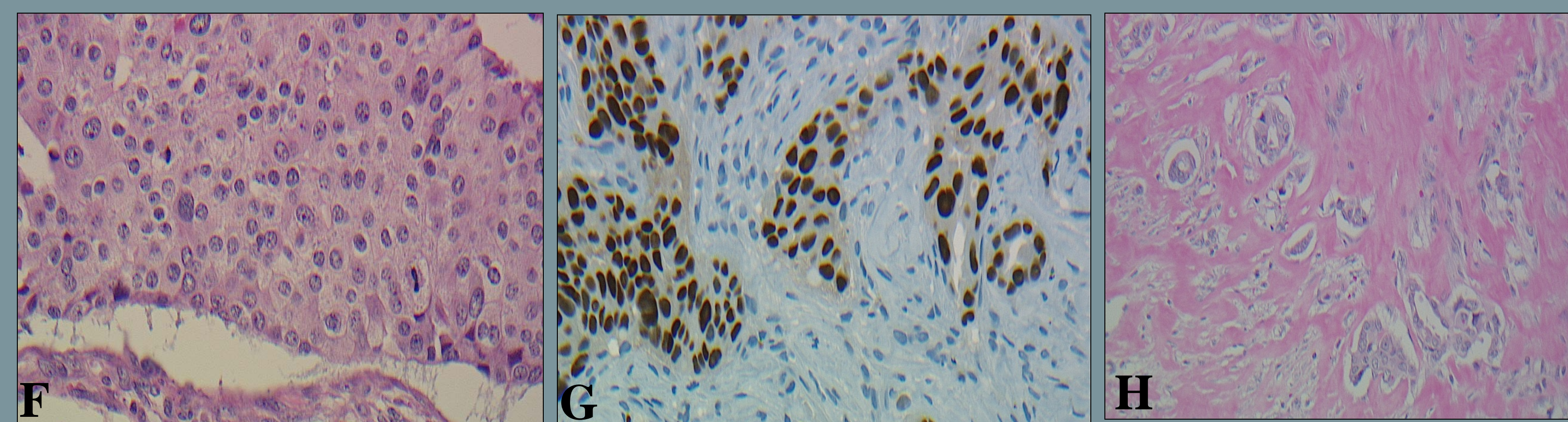
This patient is an obese 61 year old African American man who presented to Albert Einstein Medical Center with a painless but firm palpable mass in the retro-para areolar region of the right breast. The patient underwent radiography and needle core biopsy. The diagnosis was invasive ductal carcinoma (ER+, PR+, Her-2 -). The patient opted for modified radical mastectomy of the right breast and a prophylactic simple mastectomy of the left breast. After processing, the final diagnosis was invasive ductal carcinoma, stage T2, and histologic grade 3.



A. The radiographic image to the left confirms a moveable mass in the retro-para areolar region of this gentleman's right breast. **B.** The mass in image A can be distinguished from benign gynecomastia seen in image B.



C. The patient opted for a right modified radical mastectomy seen here. It is striking because you can immediately appreciate its size. A well circumscribed mass is seen in the para-areolar region bulging from below the skin surface. **D.** A closer look at the mass shows that it grossly distorts the peripheral areola and approaches 1cm from the nipple. It is important to note that there is no ulceration of the skin or involvement of nipple which has prognostic ramifications. **E.** This image shows the sagittal cut surface of the tumor. The tumor was firm with focal areas of necrosis and hemorrhage. The margins were well defined in some areas and poorly defined in others. Interestingly, in this cut you can see the biopsy tracts.



F. The H&E stained slides that were reviewed showed poorly differentiated cells growing in sheets with a high nuclear-to-cytoplasmic ratio. **G.** The tumor stained strongly for ER and PR which provides important treatment information. **H.** Less than 5% of the tumor formed glands. The abundant pink color in this image is fibrosis from the body's desmoplastic reaction.

Treatment

The traditional approach for localized breast cancer is modified radical mastectomy. The exception in men is that there tends to be extensive pectoralis chest wall involvement and so these patients may benefit from the classical radical mastectomy (5). Breast conservation therapies such as lumpectomy followed by breast irradiation is also an option.

Surgical assessment of the regional axillary lymph nodes is absolutely critical for primary therapy. Increasing amounts of data show in female studies that accurate surgical assessment of the lymph nodes is associated with a better prognosis. Additionally, data suggests that men who have node dissection omitted tend to have a worse prognosis (6).

There is limited data regarding the incidence of post mastectomy radiation therapy in men treated for breast cancer. In small experimental studies, post mastectomy radiation therapy showed to reduce local recurrence but the influence on survival is unknown. For women with node-positive breast cancer, a survival advantage with post mastectomy radiation has been shown. One review from John's Hopkins suggests that similar indications for postmastectomy radiation therapy should be applied to both women and men (7). As with female breast cancer, post-mastectomy radiation therapy is recommended for men with four or more positive lymph nodes (N2/N3 nodal disease) or locally advanced (T3/T4) primary tumors (7).

Because the majority of MBC tumors are hormone receptor positive, 5 years of adjuvant therapy with tamoxifen is recommended for most men (8). In addition, the use of Trastuzumab has shown effective for patients who are HER2-positive (9).

Prognosis

As in women, tumor size and the number of involved regional lymph nodes are the most important prognostic factors in MBC. In two reports involving 335 and 397 cases of MBC, 10 year survival rates were 77% and 84% for histologically negative nodes, 50% and 44% for one to three positive lymph nodes, and 24% and 14% for four or more positive nodes (10, 11).

MBC has been considered an aggressive disease with a considerably worse prognosis than in women. However the lower survival rates as compared with women can be attributed to older age and more advanced disease at the time of clinical presentation.

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