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Fungating mass on the breast of a male patient

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Abstract

Breast cancer is one of the most common malignancies that can lead to cutaneous metastasis. Dermatopathologists often play an important role in the diagnosis of breast cancer metastasis to the skin. Rarely, dermatopathologists render a histopathologic diagnosis of primary breast cancer. We discuss a 51-year-old man with metastatic breast adenocarcinoma who presented after admission to the intensive care unit in the setting of altered mental status and critical anemia. Examination revealed a 14cm×12cm ulcerated, fungating tumor occupying the left breast. A four mm punch biopsy from the mass showed cords of atypical cells infiltrating the mid-to-deep dermis positive for CK7, GATA3, ER and PR. CK20, P40, p63, and TTF1 stains were negative. HER2/NEU immunoperoxidase stain was negative. CA15-3 was elevated at 75U/ml. Taken together, he was diagnosed with primary left breast ductal adenocarcinoma, grade two with subsequent visceral metastases to the bones, lymph nodes, and lungs. Although male breast cancer makes up less than 1% of all breast cancers, its incidence has been increasing worldwide. Recognition of the unique clinical and histologic findings of primary breast carcinoma is important to avoid delay in the diagnosis and initiation of appropriate treatment.

Keywords: breast carcinoma, immunohistochemistry, malignancy, metastasis, oncology, tumor

Introduction

Breast cancer is one of the most common malignancies that can lead to cutaneous metastasis.

As a result, dermatologists often play an important role in the detection of metastatic breast cancer to the skin [1]. In the absence of metastatic cutaneous lesions, it is uncommon for dermatologists to make the initial diagnosis of primary breast cancer. Although male breast cancer (MBC) makes up less than 1% of all breast cancers, its incidence has been increasing worldwide [2]. We present a man with metastatic breast adenocarcinoma that was diagnosed following presentation to the hospital with a large fungating mass on the chest.

Case Synopsis

A 51-year-old man presented to the emergency department with progressive fatigue and altered mental status. Initial workup showed that he was critically anemic with a hemoglobin of 1.9g/dl. A large bleeding mass covered underneath bandages was noted on his left chest wall. The patient was admitted to the intensive care unit and a dermatology consult was requested to evaluate the mass.

Upon further review of his history, the patient's family reported that this mass first appeared about two years prior with gradual progression in size. Owing to a combination of barriers including lack of medical insurance, apprehension of the medical system, and the start of the COVID-19 pandemic, he had never sought prior medical attention. The patient was relatively healthy otherwise and had no known family history of breast cancer or occupational exposure to high heat, chemicals, or radiation.



Figure 1. Overlying the left breast is a 14cm×12cm ulcerated, fungating tumor.

On physical examination, there was a 14cm×12cm ulcerated, fungating tumor occupying the entirety of the left breast (**Figure 1**). Computerized tomography imaging showed multiple spinal lytic bone lesions, innumerable pulmonary nodules, and lymphadenopathy concerning for metastatic disease.

Our clinical differential diagnosis favored primary breast cancer but also included metastatic adenocarcinoma of other origin, lymphoma cutis, blastomycosis, and an atypical mycobacterial

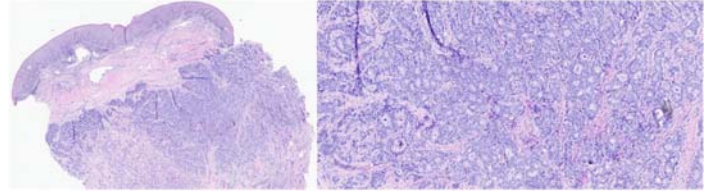


Figure 2. H&E histopathology. A four mm punch biopsy from the edge of the mass demonstrates numerous cords of atypical cells infiltrating the mid to deep dermis; 2×, 10×.

infection. A 4mm punch biopsy from the edge of the mass showed cords of atypical cells infiltrating the mid-to-deep dermis (**Figure 2**). There was strong staining for cytokeratin 7 (CK7), GATA binding protein three (GATA3), estrogen receptor (ER), and progesterone receptor (PR), (**Figure 3**). Cytokeratin 20 (CK20), P40, p63, and thyroid transcription factor-1 (TTF1) stains were negative. Human epidermal growth factor receptor two (HER2/NEU) immunoperoxidase stain was negative. Cancer antigen 15-3 (CA-15-3) was elevated at 75U/ml. Taken together, he was diagnosed with primary left breast ductal adenocarcinoma, grade two with visceral metastases to the bones, lymph nodes, and lungs. He has completed palliative radiation to the left breast mass and has been initiated on systemic chemotherapy.

Case Discussion

Most patients with breast cancer typically present to dermatologists for metastatic skin lesions rather than for the primary malignancy itself [3]. Therefore, we

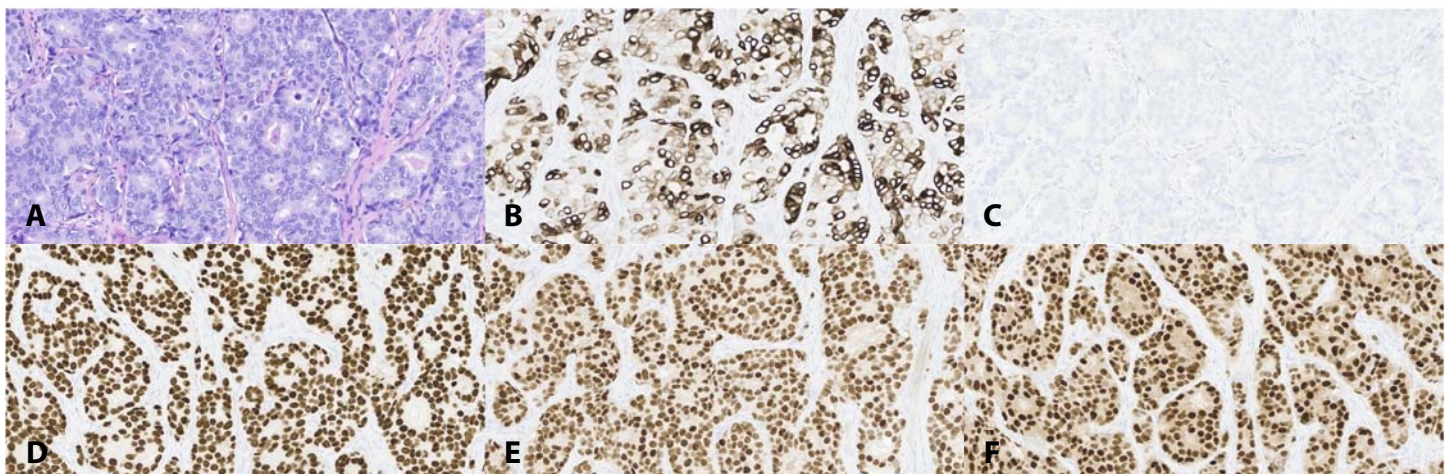


Figure 3. A) Numerous cords of atypical cells infiltrating the mid to deep dermis. H&E, 20×. Neoplastic cells expressed B) CK7, D) GATA3, E) ER, and F) PR. C) The tumor cells were negative for CK20. A-F), 20×.

report this unusual case of MBC presenting as a large fungating chest mass to contribute to the small amount of literature on this entity.

Male breast cancer has been associated with worse survival outcomes compared to female breast cancer (FBC), which is considered secondary to more advanced age and stages at diagnosis. Men are often diagnosed 5 to 10 years later compared to women [4-8]. This discrepancy may relate to the absence of standardized screening mammographies and the unfamiliarity with clinical signs of breast cancer in men [4,9,10]. Additionally, compared to FBC, locoregional management for MBC is less standardized [4-6]. After adjusting for these factors, the relative survival rates in males are actually better compared to females [4].

Clinically, MBC is typically self-detected at a median age of 63 as a painless, usually left-sided lump that is greater than two cm in size [10,11]. Histopathologically, invasive ductal carcinoma makes up greater than 90% of all MBC cases [11]. Compared to FBC, MBC is more likely to be ER positive (>90%) and PR positive (>75%) and HER2 amplification negative (5%), [11,12].

The approach to management of MBC is based on the guidelines for FBC. The treatment of early-stage

MBC consists of mastectomy or breast-conserving surgery with sentinel lymph node biopsy [13]. Since most MBC is hormone-receptor positive, adjuvant hormonal therapy such as tamoxifen for 5 to 10 years is often required [13]. A gonadotropin-releasing hormone agonist/antagonist with an aromatase inhibitor is used when tamoxifen is contraindicated [14]. For cases with visceral involvement and/or rapidly growing tumors, targeted systemic chemotherapy is implemented [13,14].

Conclusion

In conclusion, we emphasize the potential role that dermatologists may play in providing the initial diagnosis of primary breast carcinoma, which can present as a painless mass on the chest of a man. Despite its overall rarity compared to FBC, it is important for dermatologists to keep MBC on their differential diagnosis to avoid further delays in diagnosis and treatment.

Potential conflicts of interest

The authors declare no conflicts of interest.

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