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Case Report

Extremely Late Endobronchial Pulmonary Metastasis from Male Breast Cancer After Two Decades of Disease-Free Survival: A Case Report

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Abstract

Male breast cancer is a rare malignancy accounting for approximately 1% of all breast cancers and less than 1% of cancers diagnosed in men. Most tumors are hormone receptor–positive and are associated with prolonged survival; however, late recurrences may occur even decades after initial treatment. We report the case of a 82-year-old man with a history of breast cancer treated with mastectomy and adjuvant endocrine therapy more than 20 years earlier, who presented with progressive dyspnea and cough. Imaging studies revealed a pulmonary mass with endobronchial involvement. Bronchoscopic biopsy demonstrated metastatic adenocarcinoma with strong estrogen receptor (ER) expression, progesterone receptor (PR) positivity, and diffuse GATA3 staining, confirming metastatic breast carcinoma. The patient was started on endocrine therapy and supportive management. This case highlights the potential for extremely late recurrence in hormone receptor–positive male breast cancer and emphasizes the importance of considering metastatic disease in the differential diagnosis of pulmonary lesions in patients with a remote history of breast malignancy.

Keywords: *Male breast cancer; late relapse; pulmonary mass; metastatic breast cancer; case report.*

Introduction

Male breast cancer (MBC) is an uncommon disease representing approximately 0.5–1% of all breast cancers and less than 1% of cancers diagnosed in men (1). Due to its rarity, most knowledge regarding the biology and treatment of male breast cancer is extrapolated from studies conducted in female populations (2).

Unlike female breast cancer, male breast cancer is characterized by a particularly high rate of hormone receptor positivity, with estrogen receptor (ER) expression reported in more than 90% of cases (3). This biological profile often confers sensitivity to endocrine therapy and is associated with relatively favorable long-term outcomes.

Despite this generally favorable prognosis, late recurrence remains a well-recognized phenomenon in hormone receptor–positive breast cancer. Tumor dormancy and slow proliferation of micrometastatic disease may lead to recurrence many years or even decades after the initial diagnosis (4). In both male and female breast cancer, metastatic disease most commonly involves bone, liver, lung, and lymph nodes.

Pulmonary metastases from breast cancer typically manifest as parenchymal nodules; however, endobronchial metastases are rare and may clinically mimic primary lung malignancy (5).

In these situations, immunohistochemical analysis becomes essential to determine the tumor's origin.

We report a rare case of extremely late pulmonary relapse of male breast cancer presenting as an endobronchial mass more than two decades after the initial diagnosis.

Case Presentation

An 82-year-old man with a significant past medical history of localized left breast cancer diagnosed in 2002, treated with radical mastectomy and five years of adjuvant endocrine therapy (tamoxifen), and with annual follow-up visits, was admitted to the oncology service. He reported a five-month history of progressive dry cough without diurnal predominance, occasional mild chest pain, and dyspnea that had progressed to dyspnea with minimal exertion.

On physical examination, a well-healed surgical scar was observed on the left hemithorax, with the absence of the left nipple (Figure 1). Pulmonary auscultation revealed decreased breath sounds bilaterally, more pronounced on the right side. No palpable peripheral lymphadenopathy or signs of acute respiratory distress were noted.

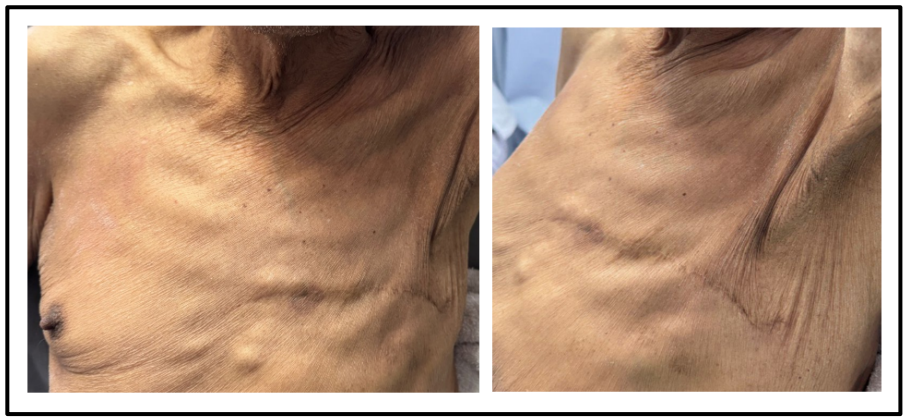

Figure 1. Postoperative scar on the left hemithorax with absence of the nipple

Chest imaging revealed a pulmonary mass suspicious for malignancy. Computed tomography of the chest demonstrated a lesion with endobronchial involvement causing partial airway obstruction. Given the patient's oncologic history, bronchoscopy was performed for diagnostic confirmation. (Figure 2).

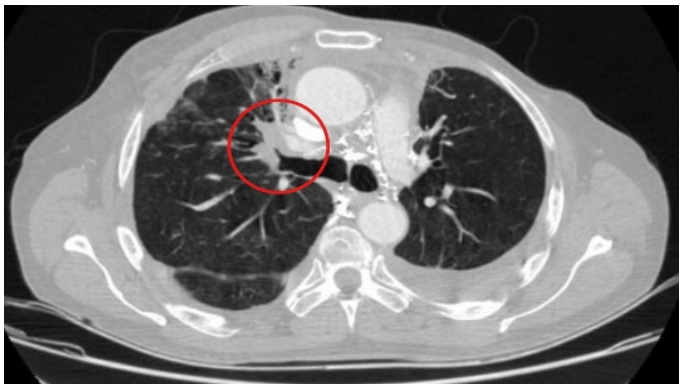

Figure 2. Contrast-enhanced chest CT. Pulmonary window: within the red circle, a spiculated peribronchial mass is seen in the anterior segment of the right upper lobe, with bilateral pleural effusion, greater on the left.

Bronchoscopic examination revealed an endobronchial lesion partially obstructing the bronchial lumen. Multiple biopsy samples were obtained.

Microscopic examination showed a moderately differentiated adenocarcinoma (Figure 3A, 3B). Immunohistochemical (IHC) studies demonstrated diffuse nuclear positivity for GATA3 (Figure 3C), strong estrogen receptor (ER) expression with 100% positive (Figure 3D) tumor cells and an Allred score of 8 (5 + 3), progesterone receptor (PR) expression in 70% of tumor cells with an Allred score of 8 (5 + 3), and negative HER2/neu expression. These findings were consistent with metastatic breast adenocarcinoma rather than primary lung adenocarcinoma.

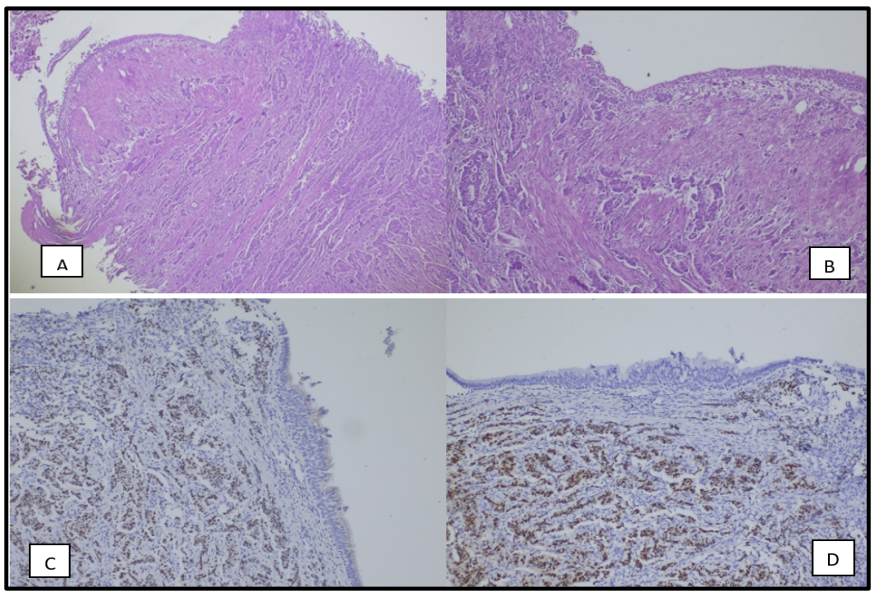

Figure 3. Biopsy from the right main bronchus. A. Histologic image showing adenocarcinoma beneath the bronchial epithelium (4× magnification). B. Histologic image showing adenocarcinoma beneath the bronchial epithelium (10× magnification). C. Positive nuclear staining for GATA3 beneath the bronchial epithelium (10× magnification). D. Positive nuclear staining for estrogen receptors beneath the bronchial epithelium (10× magnification).

In light of the confirmed diagnosis of late distant metastatic recurrence of ER-positive breast cancer and the absence of visceral crisis, systemic endocrine therapy was initiated. The patient was discharged with appropriate supportive care and scheduled for outpatient oncologic follow-up.(6).

This immunohistochemical profile strongly supported metastatic breast carcinoma as the origin of the tumor. The combination of ER positivity, PR positivity, and GATA3 expression in the context of a previous breast cancer diagnosis strongly favored metastatic disease over primary pulmonary adenocarcinoma.

After multidisciplinary evaluation, the patient was started on endocrine therapy appropriate for hormone receptor–positive metastatic breast cancer. Supportive measures were implemented to address respiratory symptoms, and the patient was discharged for outpatient oncologic follow-up.

Discussion

Male breast cancer remains an uncommon malignancy, and consequently many aspects of its biology and clinical behavior remain incompletely understood. Nevertheless, several clinical characteristics distinguish male breast cancer from its female counterpart. One of the most notable differences is the higher prevalence of hormone receptor positivity in male patients, which often makes endocrine therapy an effective therapeutic strategy (3).

Another important characteristic of hormone receptor–positive breast cancer is the potential for late recurrence. Long-term studies have demonstrated that patients with ER-positive tumors remain at risk of relapse for decades after initial treatment (4). This phenomenon is thought to reflect the presence of dormant micrometastatic disease that may reactivate after prolonged periods of clinical quiescence.

Pulmonary metastases from breast cancer are well recognized, but endobronchial involvement is relatively uncommon. When present, these lesions may produce symptoms such as cough, dyspnea, hemoptysis, or airway obstruction, and they may radiologically resemble primary lung tumors (5).

Distinguishing between primary lung cancer and metastatic breast carcinoma can be challenging based solely on imaging findings. Immunohistochemical markers therefore play a crucial diagnostic role. GATA3 is widely used as a marker of breast epithelial differentiation and is expressed in the majority of breast carcinomas (6). When combined with strong ER and PR expression, GATA3 positivity strongly supports a breast origin of metastatic lesions.

The present case is remarkable because of the exceptionally long disease-free interval between the initial breast cancer diagnosis and the development of pulmonary metastasis. Although late recurrences have been described in hormone receptor–positive breast cancer, relapse occurring more than two decades after treatment remains uncommon.

This case therefore emphasizes the importance of maintaining clinical vigilance when evaluating pulmonary lesions in patients with a history of breast cancer, even when the initial diagnosis occurred many years earlier.

Conclusion

This report describes an unusual case of extremely late pulmonary recurrence of male breast cancer presenting as an endobronchial lesion more than 20 years after the initial diagnosis. The case highlights three important clinical lessons. First, hormone receptor–positive breast cancer may recur after prolonged disease-free intervals due to tumor dormancy. Second, pulmonary metastases may present as endobronchial lesions that mimic primary lung malignancies. Third, immunohistochemical evaluation remains essential for determining the origin of metastatic tumors.

Clinicians should therefore consider metastatic breast cancer in the differential diagnosis of pulmonary masses in patients with a remote history of breast malignancy.

Learning Points

This case highlights several important clinical considerations. First, hormone receptor–positive male breast cancer may recur after extremely prolonged disease-free intervals, reflecting the biological phenomenon of tumor dormancy and the persistent risk of late relapse. Second, pulmonary metastases from breast cancer can present as endobronchial lesions that clinically and radiologically mimic primary lung malignancies, making accurate diagnosis challenging. Third, immunohistochemical markers—including estrogen receptor, progesterone receptor, and GATA3—are essential tools in distinguishing metastatic breast carcinoma from primary pulmonary tumors. Finally, clinicians should maintain a high index of suspicion for metastatic disease when evaluating pulmonary masses in patients with a remote history of breast cancer, even decades after the initial diagnosis.

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