

Tuberculosis and Breast Cancer in Tandem

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Received: October 22, 2024; **Published:** November 26, 2024

Abstract

Introduction: The coexistence of pulmonary tuberculosis and the breast carcinoma is uncommon. Tuberculosis (TB) remains a significant contributor to global morbidity and mortality. Concurrently, cancer, including breast cancer, constitutes a leading cause of death worldwide. The simultaneous occurrence of pulmonary tuberculosis (TB) and breast cancer presents a rare but challenging clinical scenario. Dual pathology leads to difficulties in interpretation and inappropriate treatment of tuberculosis as well as carcinoma breast.

Observation: We report a case of a patient aged 52 years presenting a painless nodule in the right breast for two months. She has past history of pulmonary tuberculosis. The patient was given an anti-tuberculosis treatment combining Rifampicin (H), Isoniazid (I), Pyrazinamide (Z), Ethambutol (E) over 2 months. The scan and mammography revealed a long-axis node of 3 × 2 × 1 cm in the upper outer quadrant of the right breast Birads III. The breast biopsy helped diagnose an invasive carcinoma. A right mastectomy associated with a lymph node dissection was planned. In this report, we present a case of simultaneous pulmonary TB and breast cancer, highlighting the clinical features, diagnostic challenges, and therapeutic strategies. This case underscores the importance of a multidisciplinary approach in managing patients with coexisting infections and malignancies to ensure optimal patient outcomes.

Conclusion: This coexistence is uncommon, of incidental discovery and necessitates a multidisciplinary care.

Keywords: Breast Carcinoma; Tuberculosis

Introduction

Tuberculosis, caused by *Mycobacterium tuberculosis*, is a major global health issue, particularly prevalent in developing countries. While it primarily affects the lungs, it can disseminate to other organs, including the breast. Conversely, breast cancer is one of the most prevalent malignancies among women worldwide, characterized by a diverse range of histopathological subtypes and clinical behaviors.

Few studies have documented the coexistence of TB and cancer, facilitated by factors such as malnutrition, compromised immunity due to cancer, and the administration of chemotherapy or radiotherapy. The coexistence of breast cancer and tuberculosis is very

uncommon and less reported in the literature [1-5]. The intersection of these two diseases is rare, but when it occurs, it complicates clinical management due to overlapping symptoms and diagnostic complexities. Pulmonary TB can present with chronic cough, weight loss, fever, and night sweats, while breast cancer typically presents with a palpable mass, skin changes, or nipple discharge. However, TB can also present as a breast mass, mimicking malignancy, thus adding to the diagnostic dilemma.

Histopathological examination remains the gold standard for diagnosing both conditions. TB is identified by granulomatous inflammation with caseous necrosis and acid-fast bacilli, whereas breast cancer is characterized by the presence of malignant epithelial cells. Imaging modalities like mammography, ultrasound, and CT scans provide essential insights but often require histological confirmation to differentiate between infectious and malignant processes.

This article aims to highlight the clinical features, diagnostic strategies, and therapeutic approaches for managing patients with concurrent pulmonary TB and breast cancer. By exploring case studies and reviewing current literature, we seek to provide a comprehensive overview of this complex clinical scenario, emphasizing the need for a multidisciplinary approach to optimize patient outcomes.

Case Summary

A 52-year-old woman presented with a progressive enlargement of her right breast over a two-month period. This enlargement was accompanied by mild discomfort but no acute pain. She denied experiencing any nipple discharge, skin changes, or palpable masses at the onset. Over time, the breast enlargement became more noticeable and concerning.

Past medical history:

Diabetes mellitus:

- Diagnosed 10 years ago.
- Managed with oral hypoglycemic agents (metformin and glipizide).
- Blood glucose levels regularly monitored and maintained within target range.

Family history:

- No significant history of breast cancer or other malignancies.
- Family history of type 2 diabetes (mother).

Social history:

- Non-smoker.
- Occasional alcohol consumption.
- No recent travel history to TB-endemic regions since completing ATT.
- Married, living with spouse, and two adult children.

Physical examination:

- General appearance: Alert, oriented, and in no acute distress.
- Vital signs: Blood pressure 130/80 mmHg, heart rate 78 bpm, respiratory rate 16 breaths/min, temperature 36.8°C.
- Breast examination:

- Right breast significantly enlarged compared to the left.
- Diffuse swelling without distinct palpable masses.
- Skin overlying the right breast appeared stretched but without dimpling or Peau d'orange appearance.
- No nipple retraction or discharge noted.
- Axillary examination revealed no palpable lymph nodes.

Management

Laboratory findings:

- Complete blood count: Revealed leukocytosis.
- Renal function tests: Within normal limits.
- Liver function tests: Within normal limits.
- Serum electrolytes: Within normal ranges.
- Random blood sugar: 120 mg/dL (within normal range).

Imaging studies:

1. Chest X-ray: Showed multiple nodular opacities? suggestive of cannonball metastasis.
2. Contrast-Enhanced Computed Tomography (CECT) of the thorax:
 - Multiple nodular opacities in the lungs consistent with metastatic lesions. As shown in figure 1.
 - Heterogeneously enhancing mass lesion in the right axillary region extending into the breast.
3. Ultrasound examination of the breast:
 - BIRADS 3 result indicating a lesion that is probably benign but warrants short-term follow-up and further investigation.

Histopathological examination

A true-cut biopsy of the right breast mass confirmed the presence of ductal carcinoma.

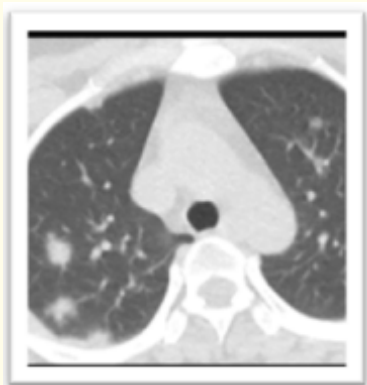


Figure 1

Further diagnostic and management plans: Given the diagnosis of metastatic breast cancer, further investigations including bronchoscopy and a positron emission tomography (PET) scan were planned to evaluate the extent of disease spread and to guide therapeutic decisions. Unfortunately, the patient expired before these investigations could be performed.

Discussion

Despite the initial breast swelling, the primary focus was on treating the newly diagnosed pulmonary TB. Given the severity of the TB symptoms and the initial small size of the breast swelling, no further investigations into the breast condition were conducted at that time.

Studies have elucidated the prevalence of various malignancies, with breast cancer ranking prominently. The coexistence of TB and cancer presents diagnostic and therapeutic challenges, necessitating comprehensive evaluations and interdisciplinary collaboration. While initiating anti-TB treatment before chemotherapy in cancer patients is advisable, ensuring compliance with both regimens remains a challenge [6-9].

Conclusion

In individuals of middle to advanced age presenting with chronic pulmonary symptoms and concomitant weight loss and weakness, malignant disease should be considered alongside TB. The presence of pulmonary TB does not preclude the possibility of an underlying malignant process. A thorough evaluation is imperative in cases where dual pathologies are suspected, potentially saving lives through additional investigations. Seeking expert advice in respective domains is paramount to optimal patient care. This coexistence is uncommon and of incidental discovery, hence there is a need for a careful and full examination of lymph node dissections. The treatment requires a multidisciplinary collaboration.

Conflicts of Interest

The authors declare no conflicts of interest.

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Volume 13 Issue 12 December 2024

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