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A Perplexed Case of Breathlessness Leading to the Diagnosis of Synchronous Bilateral Breast Carcinoma - A Rare Case Report

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Abstract: ***Synchronous breast cancers, characterized by the simultaneous occurrence of primary tumors in both breasts, present a unique clinical challenge. These cancers are relatively rare, with risk factors including genetic predispositions, such as BRCA1 and BRCA2 mutations, a family history of breast cancer, and early - onset breast cancer (4). Diagnosis often involves comprehensive imaging techniques, with MRI being particularly effective in detecting bilateral tumors that mammography might miss (4, 5). Treatment strategies typically include a combination of bilateral mastectomy, chemotherapy, hormonal therapy, and targeted therapy, tailored to the specific characteristics of the tumors (4, 3). Prognostically, synchronous breast cancers are associated with a lower survival rate compared to unilateral breast cancer, attributed to the complexity of managing two tumors concurrently (3). However, early detection and aggressive treatment can improve outcomes (5). Studies indicate that adherence to guideline - recommended treatments is crucial for enhancing survival rates (5). Continued research is necessary to better understand the biological behavior of synchronous breast cancers and to develop optimized therapeutic approaches for affected patients (3). This case report is about a patient presenting with breathlessness who was incidentally diagnosed with synchronous breast cancer.***

Keywords: breathlessness, synchronous bilateral breast cancer, SBBC

1. Introduction

Synchronous bilateral breast cancer is identified when a cancer in the opposite breast is diagnosed within a year of the initial breast cancer diagnosis [6]. Bilateral breast cancer accounts for approximately 3% of all breast cancer cases, with synchronous tumors comprising 0.6% and metachronous tumors making up 2.2%. The occurrence of two primary breast cancers may stem from genetic predispositions, exposure to shared environmental risk factors, or the result of two independent events [7]. Younger patients have a significantly higher relative risk of developing metachronous bilateral breast cancer. The likelihood of a patient with a history of breast cancer developing a new primary cancer in the opposite breast is about five times greater than the risk of breast cancer in individuals with no prior history of the disease.

2. Case Report

The patient is a 49 year old female, who is a known case of hypothyroidism on regular medications, bronchial asthma and chronic kidney failure for 3 years on regular dialysis weekly twice, on regular follow up. She presented to the emergency room with complaints of breathlessness and admitted in view of desaturation. Chest x ray showed right sided pleural effusion (figure 1). Pleural fluid aspiration was done and revealed transudative effusion, cytology – negative. She had complaints of intermittent chest pain during dialysis. ECG showed non - specific changes and ECHO showed normal LV dysfunction. She was advices CAG which revealed normal epicardial coronaries; left dominant circulation. CT chest was done which revealed right pleural effusion with soft tissue lesion of breasts (figure 2a and 2b).

On further investigation, PET - CT showed hypermetabolic lesions with necrosis in bilateral breasts, lesion of size 1.8 x 1.4cm with SUV max 8.3 in right breast and lesion of size 1.8 x 1.6cm with SUV max 4.3 in left breast with left upper lobe nodule with SUV of 1.6, right hilar and prevascular node SUV of 3.2, moderate bilateral pleural effusion with no FDG avid (figure 3).

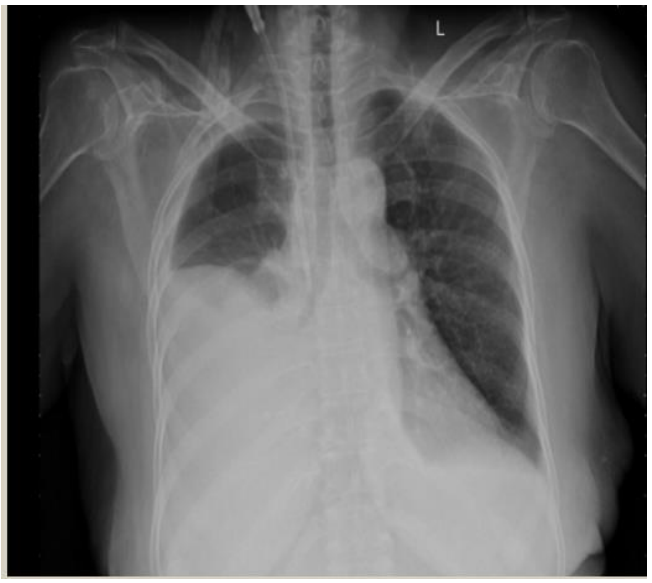

Figure 1: Chest X - ray showing massive right sided pleural effusion

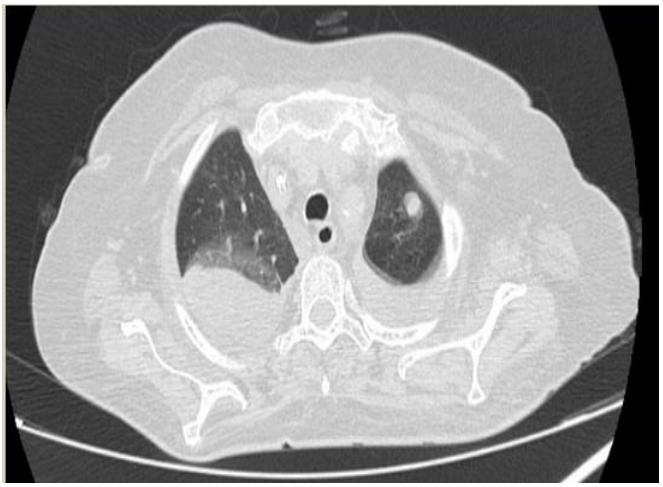

Figure 2 (a)

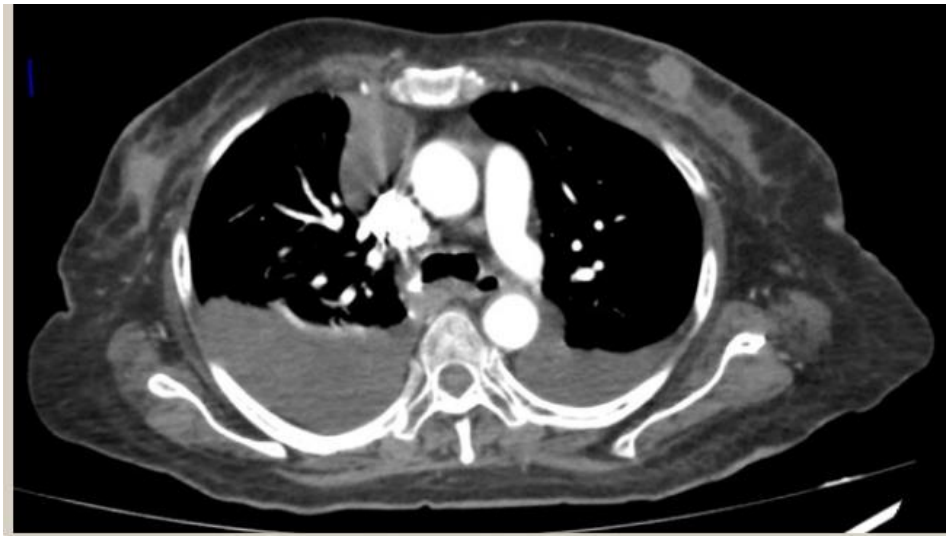

Figure 2(b): CT chest showing bilateral pleural effusion (R>L) with soft tissue lesions on breast

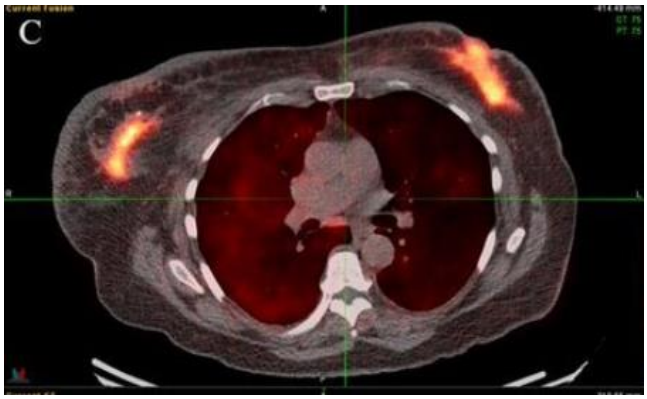

Figure 3: PET CT showing lesions in bilateral breasts.

Repeat pleural fluid analysis was done and was negative for malignant cells. Biopsy of bilateral breast lesions showed histopathological report of infiltrating ductal carcinoma with ductal and lobular features with was ER/PR positive and HER 2 NEU negative in the right breast, infiltrating ductal carcinoma, grade I to II with ER/PR positive and HER 2 NEU negative in the left breast. Patient was then referred to medical oncologist and initiated on chemotherapy and started on carboplatin and paclitaxel regimen.

3. Discussion

Synchronous bilateral breast cancer (SBBC) is defined by the simultaneous occurrence of primary malignant tumors in both breasts. This condition, though relatively rare, represents a significant clinical challenge due to its complexity and the necessity for a nuanced treatment approach. The incidence of SBBC varies but is generally estimated to be between 1 - 3% of all breast cancer cases (4) (3).

Several risk factors have been identified for SBBC. Genetic predispositions, particularly mutations in the BRCA1 and BRCA2 genes, play a crucial role. Women with a family history of breast cancer, those diagnosed at a young age, and those with lobular carcinoma are also at increased risk (4) (5) . Environmental and lifestyle factors, such as alcohol consumption and hormone replacement therapy, may further contribute to the risk (4).

The diagnosis of SBBC is often challenging, requiring comprehensive imaging techniques. While mammography remains a standard diagnostic tool, it may miss bilateral tumors, necessitating the use of MRI for more accurate detection (4) (5). MRI's sensitivity in detecting multifocal and multicentric disease makes it an invaluable tool in the diagnostic process (5).

Treatment strategies for SBBC are multifaceted and typically involve a combination of surgical and systemic therapies. Bilateral mastectomy, along with adjuvant chemotherapy, hormonal therapy, and targeted therapies such as HER2 inhibitors, is commonly employed to manage the disease (4) (3). The complexity of treating two primary tumors simultaneously often necessitates a personalized treatment approach tailored to the specific characteristics of each tumor.

Prognostically, patients with SBBC tend to have a lower survival rate compared to those with unilateral breast cancer. This is largely due to the increased biological aggressiveness and the difficulty in managing synchronous tumors (3). However, early detection and adherence to guideline - recommended treatments can significantly improve outcomes (5). Malignancy and CKD can weaken the immunity of the patient and make them more susceptible to other opportunistic infections. Proper evaluation and early diagnosis of rare malignancy is the key to better prognosis, especially in patients with already diagnosed ailments.

Continued research is essential to better understand the pathophysiology of SBBC and to develop optimized therapeutic approaches. As our understanding of the genetic and molecular underpinnings of this condition evolves, so too will our ability to effectively diagnose and treat patients with SBBC (3) .

4. Conclusion

The incidental finding of synchronous bilateral breast cancer (SBBC) highlights the complexity and rarity of this condition, which necessitates a thorough and careful diagnostic approach. The simultaneous occurrence of primary tumors in both breasts presents unique challenges in treatment and management. Early and accurate diagnosis, often achieved through advanced imaging techniques like MRI, is critical for effective treatment planning (4) (5).

SBBC cases often require a combination of surgical interventions, such as bilateral mastectomy, and systemic therapies, including chemotherapy, hormonal therapy, and targeted treatments (4) (3). The prognosis for patients with SBBC tends to be poorer compared to those with unilateral breast cancer, primarily due to the difficulty in managing two primary tumors at once and the biological aggressiveness of the disease (3) .

Studies emphasize the importance of early detection and adherence to guideline - recommended treatments to improve outcomes for patients with SBBC (5) . Ongoing research is essential to better understand the pathophysiology of SBBC and to develop optimized therapeutic strategies for affected individuals (3) . The incidental discovery of SBBC underscores the need for vigilance and comprehensive evaluation in breast cancer diagnosis and management.

There is no conflict of interest

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