Uncommon Site of Metastasis: A Case Report of Breast Carcinoma Spreading to the Pancreas

Abstract

The metastatic lesions to pancreas are reported in various malignancies. However, pancreatic metastasis from breast cancer is rare and difficult to diagnose due to nonspecific symptoms and imaging findings. At the time of diagnosis, there may already be an associated widespread metastasis. In this case report, a woman in her forties with a history of breast cancer was found to have widespread metastases, including in the pancreas. The patient was treated with chemotherapy and hormonal therapy.

Keywords: *Breast cancer, fluorodeoxyglucose, pancreatic metastasis, positron emission tomography-computed tomography*

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Introduction

The most common malignancy reported to cause pancreatic metastases is renal cell carcinoma.[1,2] Pancreatic metastasis from breast cancer is a rare occurrence.[2] While the breast is a common site for metastasis in other organs, such as the liver, lung, and bone, pancreatic metastasis is relatively uncommon. The published literature has only few of the case reports (34 cases over a span of four decades) with breast cancers associated with pancreatic metastases, showing rarity of the condition. The diagnosis of pancreatic metastasis from breast cancer is challenging due to the nonspecific symptoms and imaging findings, often leading to delayed diagnosis and poor prognosis.[3,4] The patients with pancreatic metastases can have solitary lesion as well as widespread disease at the time of diagnosis. However, the solitary lesion may be misinterpreted as synchronous or metachronous primary pancreatic carcinoma. In this case report, we present a case of pancreatic metastasis from the primary breast cancer with widespread metastases at the time of diagnosis, the treatment given to the patient and follow-up.

Case Report

A woman in her forties noticed a lump in her left breast along with overlying skin changes approximately 5 years ago. The mammogram showed a high likelihood of malignancy (BIRADS 5), with no enlarged lymph nodes. Histopathology and immunohistochemistry (IHC) from the lump showed infiltrative ductal carcinoma, with a positive estrogen receptor (ER) and progesterone receptor (PR) status but negative for the Her2neu receptor. Whole body bone scan and contrast-enhanced computed tomography (CECT) of the thorax, abdomen, and pelvis did not show any signs of distant metastasis. The patient underwent modified radical mastectomy, and the pathological stage was pT2N0M0. She then received adjuvant chemotherapy with the cyclophosphamide, epirubicin, and 5-fluorouracil regimen for six cycles, followed by one cycle of oral tamoxifen, which was discontinued due to abnormal uterine bleeding, and the patient underwent vaginal hysterectomy as she had completed her family. She was on regular follow-up for the next year and remained asymptomatic. She then defaulted the regular hospital visits. Eight months back, she experienced mild abdominal discomfort, prompting her to undergo an ultrasonography which revealed a collection in the pancreatic head (images not shown). A subsequent CECT scan showed irregular hypodense nonenhancing masses in both the pancreatic head and tail, initially thought to be collections [Figure 1]. After an initial inconclusive fine-needle aspiration

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cytology (FNAC), the patient underwent an endoscopic ultrasound-guided FNAC and biopsy from the pancreatic head mass, which showed no malignant cells on biopsy but a suspicious result for adenocarcinoma on FNAC. The patient's cancer antigen 19-9 (CA 19.9) level was within the normal limits (31.1 U/mL; reference range 0–37.0 U/mL). However, she did not follow-up with the hospital until 3 months later when she developed left-sided chest pain, breathlessness, and pleural effusion. Computed tomography (CT) of the thorax revealed bilateral moderate pleural effusion and other concerning findings including multiple bilateral pleural deposits, left upper lobe collapse, and right lung apical segment consolidation [Figure 2]. There was an enlarged left axillary lymph node. These lead to suspicion of recurrent metastatic disease. A few days later, the patient complained of dizziness. A subsequent magnetic resonance imaging of the brain showed probable metastasis in the right frontal meninges with a well-defined extra-axial T1W/T2W isointense lesion (not shown). ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography-computed tomography (PET-CT) scan revealed multiple sites of metastatic spread, including the pancreas, lymph nodes, and bones [Figure 3]. A biopsy of the pancreatic head lesion confirmed the presence of adenocarcinoma with positive IHC for GATA3 and negative IHC for CK7, CK20, and CDX2, favoring a breast primary tumor [Figure 4]. Hormonal profiling showed that the tumor cells were positive for ER (>90%) and negative for PR and Her2neu receptors. The patient received weekly paclitaxel for a total of 17 doses, followed by two doses of fulvestrant injections every 2 weeks and daily oral letrozole. A follow-up FDG PET-CT scan of patient shows early progressive disease [Figure 5].

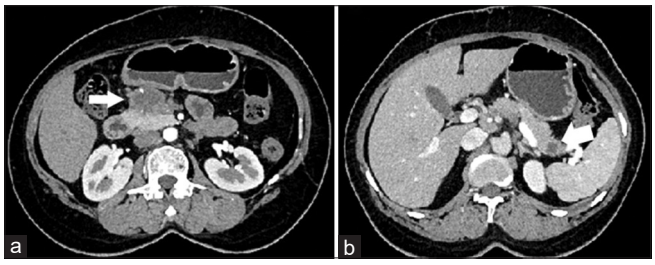

Figure 1: Contrast enhanced computed tomography images of head of pancreas (a) and tail (b), showing irregular hypodense nonenhancing masses with few vessels traversing through the mass in head region (arrows)

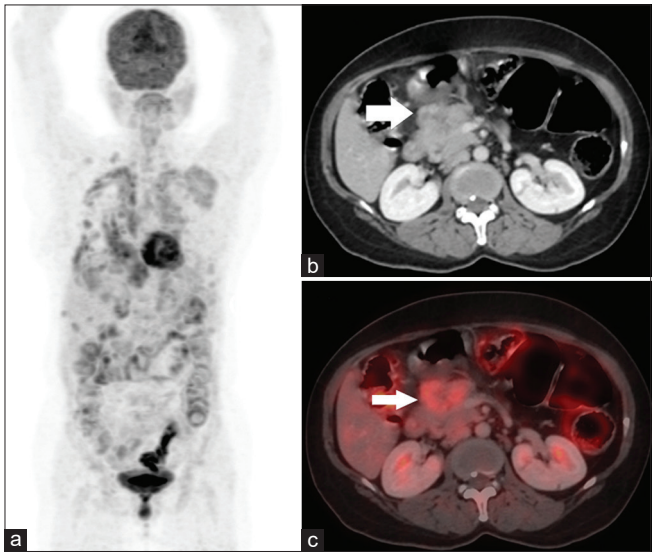

Figure 3: ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography (PET-CT) scan shows (a - maximum intensity projection image) multiple sites of metastatic spread, including the lung, pleura, lymph nodes, and bones. Axial computed tomography (b) and fused PET-CT (c) images shows increased tracer uptake in an enhancing soft tissue mass in the pancreas (arrows) suggestive of metastatic involvement

Discussion

Among women worldwide, breast cancer is the most common malignancy,[5] and it commonly metastasizes to organs such as the lungs, bones, liver, and brain.[6] Pancreatic metastases, on the other hand, occur infrequently and usually in the later stages of the disease. By the time of diagnosis, widespread metastases may have already occurred. However, there have been reports of solitary pancreatic metastases that can mimic primary pancreatic malignancy, either synchronous or metachronous. According to the literature, there have been 27 reported cases of solitary pancreatic metastasis, while 7 cases have shown widespread disease. Among these cases, the head of the pancreas was the main site of metastasis in 24 cases, followed by the tail (4 cases), body (2 cases), neck (1 case), and multiple pancreatic metastasis (3 cases).

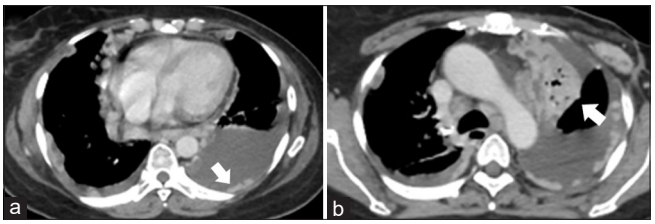

Figure 2: Contrast enhanced computed tomography image of thorax showing mild right pleural effusion and moderate left sided pleural effusion with multiple bilateral pleural deposits (arrow in a). There is collapse of the left lung upper lobe (arrow in b)

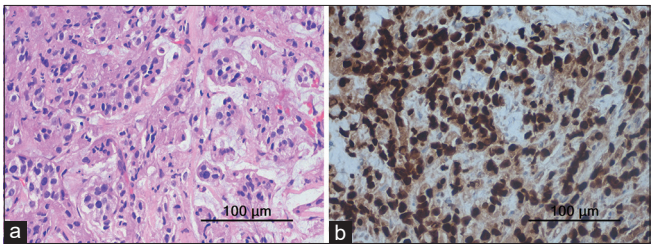

Figure 4: H and E 40X- Representative photomicrograph (a) shows a tissue core infiltrated by an adenocarcinoma. The tumor cells are arranged in small nests and singly. There is presence of extracellular mucin. (b) Tumor cells shows strong nuclear positivity for GATA-3. Tumor was positive for estrogen receptor and negative for CK-7, CK20, CDX2, progesterone receptor and HER2 NEU (not shown here)

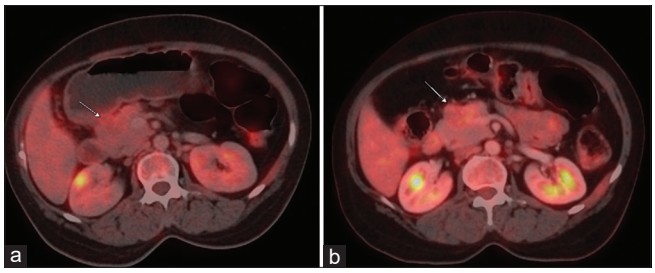

Figure 5: The ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography scan at baseline (a) and postchemotherapy (b) shows ill-defined heterogeneously enhancing lesion involving the head of pancreas (arrows). There is mild increase in the size of lesion and metabolic activity on follow-up scan suggestive of early disease progression

The time interval between the primary breast carcinoma diagnosis and the spread to the pancreas varied from 1 month to 19 years, which is the longest reported duration. In most cases, patients are asymptomatic at the time of diagnosis, and the mass is detected during follow-up examinations.[7] FNAC is a possible method for the diagnosis without requiring an open biopsy or laparotomy. Given the rarity of this condition, any pancreatic lesion in a patient with a history of breast cancer should be considered sinister and thoroughly evaluated. This case report reveals a patient with widespread recurrent disease, including pancreatic metastasis and hypermetabolic peripancreatic lymph nodes, suggesting lymphatic involvement around the metastatic sites.

The case highlights the importance of regular follow-up and adherence to treatment protocols in the management of breast cancer. Despite initial successful treatment, the patient defaulted on regular hospital visits, and this may have led to a delay in detecting the recurrence of the cancer. The case also illustrates the complexity of diagnosing metastatic breast cancer, particularly in cases where the cancer has spread to uncommon sites such as the pancreas. The case report also emphasizes the need for individualized treatment plans for patients with metastatic breast cancer based on their specific tumor characteristics and medical history.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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