

# Superficial Metastases from Breast Cancer and Gallbladder: Detected by 18F FDG PET-CT Scan

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## ABSTRACT

Cutaneous and subcutaneous metastases from internal malignancies are rare. The reported incidence of subcutaneous metastasis is 5.3% and cutaneous metastasis account for 0.7% and 9% of all metastases. Here we reported two cases of cutaneous metastasis, one from gall bladder cancer and other from breast cancer. Among all internal malignancies the incidence of cutaneous metastasis in breast cancer is highest whereas in gall bladder cancer is rare. Detection of cutaneous or subcutaneous metastasis determines the staging, prognosis and management strategy of the disease. 18F FDG PET-CT (18 Fluorine fluorodeoxyglucose positron emission tomography computerized tomography) scan has been reported to play a potential role in the identification of cutaneous or subcutaneous metastasis. These metastases were detected on whole body 18F FDG PET-CT scan during restaging of the disease. The lesions were FDG avid and biopsy proven metastasis. Intense FDG avidity with SUV max 10.5 was revealed in nodular lesion in abdominal wall from gall bladder cancer. The nodular lesion in gluteal region in a patient with breast cancer had low avidity with SUV max 3.8 later evaluated as cutaneous metastasis. Here the cases are reported to emphasize the PET-CT imaging as a potentially used one-stop-shop imaging modality in patients with cutaneous or subcutaneous metastases from internal malignancies. PET-CT imaging can reliably identify hypermetabolic cutaneous metastasis and can help not only to restage the disease but also to guide new therapeutic strategies.

**Key words:** Subcutaneous metastasis, Cutaneous metastasis, PET-CT.

## INTRODUCTION

The incidence of subcutaneous or cutaneous metastasis from a visceral malignancy, excluding malignant melanoma, lymphoma, and leukemia, is rare. The reported incidence of subcutaneous metastasis is 5.3% and cutaneous metastasis accounts for 0.7% and 9% of all metastases (1).

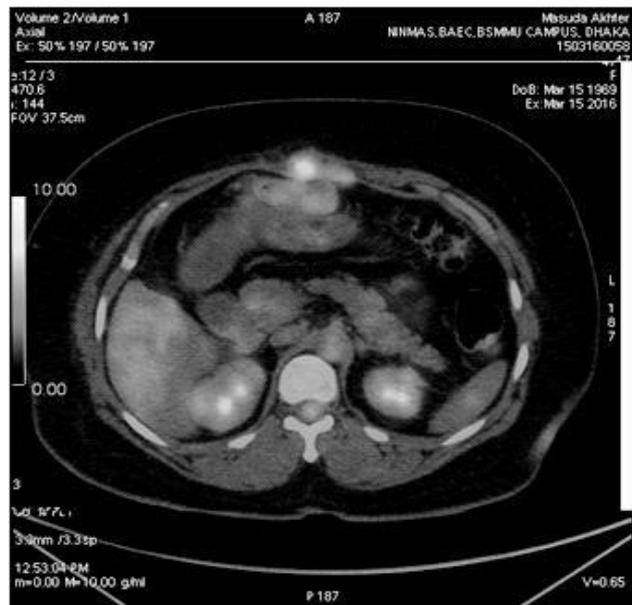
Among all internal malignancies the reported the incidence of cutaneous metastasis in breast cancer is highest whereas in gall bladder cancer (GB Ca) is extremely rare (1). The most common metastatic sites for gall bladder cancer are the local lymph nodes, liver or surrounding peritoneal structures. Occasionally, extra-peritoneal metastases may occur, but these are primarily in the lungs and the pleura (2). Metastases to distant subcutaneous tissue are exceedingly rare with only six reported cases of GB Ca with metastases to subcutaneous tissue (3). Primary breast cancer cells metastasize through the blood vessels to various distant organs, commonly, to the lung, liver and bones (4). It has been reported that metastatic cutaneous lesions are seen more common in breast cancer than in any other malignancy in women, exceeding 20% of all cutaneous metastases (5).

Cutaneous metastases indicate tumor infiltration of skin through blood capillaries, and lymph vessels. The presence of cutaneous metastasis signifies widespread systemic disease and a poor prognosis with reduced survival. Detection of cutaneous metastasis is important for staging of the disease and prognostication. The utility of PET-CT scan in identifying and evaluating cutaneous or subcutaneous metastases have been previously described in several studies (6-10). Here we have reported two cases of cutaneous metastases from gall bladder cancer and breast cancer, which were identified as hypermetabolic lesions during 18 FDG-PET-CT whole body scan for restaging of the disease.

## CASE ONE

A diagnosed case of 74 years old woman with well differentiated adenocarcinoma of gall bladder underwent

Whipple's operation followed by chemotherapy in the year 2014. The patient was asymptomatic and a diagnostic CT scan in February 2016 showed no evidence of residual or recurrent mass at the site of surgery or any metastasis to adnominal or distal organ. The patient was referred to National Institute of Nuclear Medicine and Allied Sciences (NINMAS) for 18F FDG PET- CT scan to for restage the disease. Intense FDG avid (SUVmax 10.5) and irregular hyperdensity lesion was identified in the cutaneous layer of abdominal wall at epigastric region (Figure 1). No abnormal FDG uptake is noted in the operation site intra-abdominally or elsewhere of the body. The FDG avid subcutaneous lesion was evaluated ultrasonographically, which appeared as a hypoechoic soft tissue lesion (2.0 cm X 1.6 cm) on high resolution abdominal ultrasound . The lesion was excised and histopathologically proven as subcutaneous metastatic adenocarcinoma.



**Figure 1: An axial view of PET-CT scan shows FDG avid (SUVmax- 10.5) subcutaneous metastatic deposit to the abdominal wall at epigastric region in a known case of well differentiated adenocarcinoma of gall bladder.**

## CASE TWO

A 56 years old lady with diagnosed duct cell carcinoma of right breast underwent radical mastectomy and treated with chemotherapy. Eight years later she developed a swelling in the right buttock in 2016. A hypoechoic soft tissue lesion of

9.0 X 8.0 mm size at 5 mm depth from skin surface was identified in high resolution 2D ultrasonography. Fine needle aspiration cytology from the swelling was done and showed metastatic adenocarcinoma, morphologically consistent with ductal carcinoma breast. She was subjected to whole body 18 FFDG PET-CT scan to restage the disease at a private PET centre, Dhaka. No abnormal FDG uptake was noted over the right chest wall and both axillae. Mild FDG uptake (SUV max 3.8) is noted in the swelling (1.5 cm X 1.2 cm) in the cutaneous layer at right buttock (Figure 2). Finally the swelling was removed and metastatic deposit was confirmed by cyto-pathology.



**Figure 2: An axial view of PET-CT scan shows FDG avid (SUV max 3.4) metastatic deposit in cutaneous layer at right buttock in a known case of ductal carcinoma of right breast.**

## DISCUSSION

Several studies have previously been reported about subcutaneous metastasis in patients with breast cancer, genitourinary cancers, colon cancers, gastric cancers, hepatocellular carcinomas, gynecologic cancers, esophageal, thyroid cancers, and lung cancers (11). Subcutaneous metastases are quite common in patients with malignant melanoma of skin. In this uncommon report, subcutaneous metastasis from gall bladder cancer showed intense FDG avid lesion in PET-CT scan, which was hyper dense on CT scan. The lesion was located in adnominal wall at epigastria region. Similarly Sean F. Heavey et al reported a case of gall bladder carcinoma with multiple subcutaneous metastases located in different sites including anterior

abdominal wall, which were FDG avid (3) on PET CT scan. Asymptomatic and wide spread subcutaneous metastases from breast cancer were detected as FDG avid subcutaneous lesion on PET-CT scan similar to the reported case two of breast cancer (11, 12). Another study by Nghi C Nguyen et al on prevalence and nature of soft tissue metastases detected on PET-CT FDG showed FDG avidity in most of the subcutaneous metastases from melanoma, lymphoma, lung cancer and esophageal cancers and 49 % lesions were less than one centimeter in size. The lesions were hyper dense on CT scan similar to these presented cases (13). Cutaneous breast metastases most commonly present on the chest wall. The abdomen, back, head and neck, scalp, and upper extremities also are common sites however the presented breast cancer has cutaneous metastasis in the gluteal region.

## CONCLUSION

PET-CT imaging can reliably identify hyper-metabolic cutaneous and subcutaneous metastases from FDG avid primary malignancies. PET-CT can help in accurately localize the lesion and provide accessible biopsy site thereby unnecessary invasive procedures could be avoided. Detection of FDG avid subcutaneous metastasis has prognostic implication and imaging can help not only to restage the disease but also to guide new therapeutic strategies.

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