

## Unusual Presentation of Invasive Mammary Carcinoma Metastasized to Skin, Case Series

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### Abstract

Cutaneous metastasis of cancer is uncommon, occurring in approximately 1% to 10% of metastatic forms of cancer. Breast cancer has the highest incidence of cutaneous metastasis, accounting for 30% of cutaneous metastasis of internal malignancies. Cutaneous involvement has been observed in 23.9% of breast cancer patients. Adenocarcinomas comprise about 60% of metastatic cancers. Cutaneous metastatic spread of cancer may occur through lymphatic or vascular routes, hematogenous dissemination, direct implantation during surgery, or by contiguous growth of the cancer. Cutaneous manifestations may be the first clinical sign of breast malignancy but will more commonly arise following diagnosis and treatment. We are reporting two patients with rare presentations of cutaneous metastasis of invasive mammary carcinoma.

**Keywords:** *Invasive Mammary Carcinoma; Breast Cancer; Adenocarcinomas*

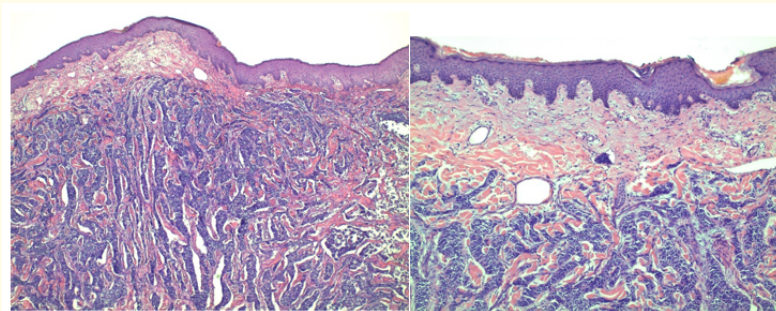
### Introduction

Cutaneous metastasis of cancer is uncommon, occurring in approximately 1% to 10% of metastatic forms of cancer [1,2]. Breast cancer has the highest incidence of cutaneous metastasis, accounting for 30% of cutaneous metastasis of internal malignancies [2,3]. Cutaneous involvement has been observed in 23.9% of breast cancer patients [4-7]. Adenocarcinomas comprise about 60% of metastatic cancers [2]. Cutaneous metastatic spread of cancer may occur through lymphatic or vascular routes, hematogenous dissemination, direct implantation during surgery, or by contiguous growth of the cancer [8]. Cutaneous manifestations may be the first clinical sign of breast malignancy but will more commonly arise following diagnosis and treatment [4,8,9]. Cutaneous metastatic findings are generally observed within 5 years of initial diagnosis of breast carcinoma [10]. Cutaneous metastasis of breast cancer presents with variable morphologies. Nodules are the most common presenting cutaneous form of breast cancer metastasis [11]. Other cutaneous presentations of metastasis include ulcers, sclerodermiform, erysipeloid infiltration, telangiectatic, inflammatory carcinoma, en cuirasse, and palpebral nodules [4,6,11]. Lesions of cutaneous metastasis also mimic and may be confused with other cutaneous skin disorders which include erythema annulare, herpes zoster, lupus erythematosus, or a condyloma [2]. The most commonly affected sites of metastasis to the skin are the chest wall, abdomen, and scalp besides other less frequent sites: the back, upper arms, lower abdomen, buttocks, perianal region, eyelids, and lower extremities [2,3]. We report two cases of patients with cutaneous metastasis of invasive mammary carcinoma.

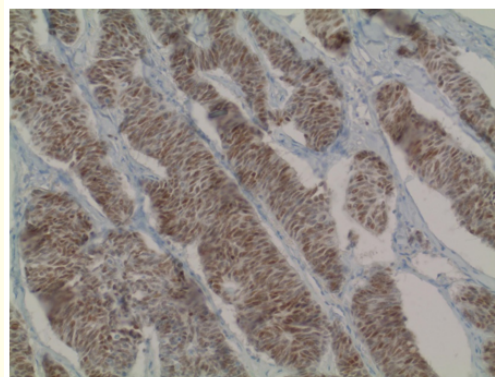
## Case Presentation

### Case 1

79-year-old female with 12-year-history of invasive mammary carcinoma. Patient underwent lumpectomy followed by post-operative chemotherapy. Patient was known to be in remission before she presented to our clinic with multiple abdominal skin lesions and chest wall masses variable in size from 0.8 cm to 2.1 cm. The lesions are biopsied and reported as metastatic invasive mammary carcinoma. Current metastatic workup is negative for metastasis in liver, bone, and brain. Histologically, the lesion shows multiple nests of malignant cells forming cords and trabeculae in some areas. The tumor is invasive to dermal tissue with epidermal sparing which is classic for metastatic tumors to skin. The tumor is positive for GATA-3 and Pan-keratin and negative for ER, PR, and S100. The lesion lacks glandular formation and appears as poorly differentiated invasive carcinoma proved to be of mammary origin by immunohistochemistry and supported by the patient clinical history.



**Figure 1:** HE 10x and 20x, case report 1.



**Figure 2:** GATA 3, 20x, case report 1.

### Case 2

A 73-year-old female with non-healing chest wall ulcer concerning for possible malignancy. Patient reports heavy alcohol use, between 4 - 10 drinks per day. The initial clinical impression was left breast mass with necrosis and superimposed bacterial infection. On physi-

cal examination, Patient has large, malodorous, deeply invading non-healing ulcer on the left chest below the breast approximately 4 - 6 inches across, Surrounded by erythema and induration. Patient is alert, awake, and oriented. Head/Eyes are atraumatic, clear cornea, normal conjunctiva/sclera, normal eyelids, normocephalic. ENT examination shows normal dentition, normal ear left, normal ear right, normal nose, normal pharynx, normal sinus. Cardiovascular examination shows normal capillary refill, regular rate and rhythm. Respiratory examination shows clear to auscultation, no signs of respiratory distress. Abdominal examination showed non-tender, normal bowel sounds, no distention, no guarding, no hernia, no mass/organomegaly, no rebound tenderness. Extremities showed normal range of motion. Skin exam showed that patient has significant nonhealing wound on left chest. Wound is bandaged and dressing is clean and intact.

CT scan with contrast of abdomen and pelvis showed enlarged left retroperitoneal para-aortic lymph node which measures 1.8 x 1.7 cm. Mixed sclerotic and lytic changes in the posterior left T12 vertebra and posterior elements. There is wedging deformity of the T12 vertebra. Sclerotic lesion in the posterior right iliac bone. These findings are concerning for metastatic lesion.

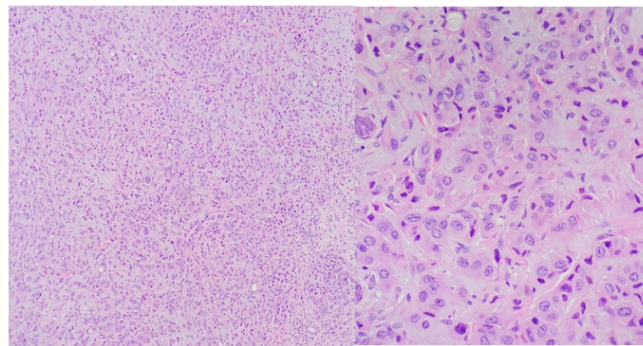
CT scan with contrast of chest showed heterogeneously enhancing fungating ulcerating mass related to the left anterior chest wall and breast region measuring approximately 10.9 x 14.3 x 3 cm. Numerous cutaneous heterogeneously enhancing nodules along the anterior and left chest wall, likely metastatic deposits. Anterior mediastinal mass and left anterior pericardial fat mass, likely metastatic lesions. Mixed sclerotic and lytic lesions related to the superior aspect of the sternum, right clavicular head, left posterior T12 vertebra and extending to the posterior elements. Advanced emphysema and small left pleural effusion are identified.

Bone scan showed multifocal areas of radiotracer uptake related to the proximal sternum, medial aspect of right clavicle, left anterior fourth rib, T12 and T11 vertebral bodies suggestive of bone metastasis.

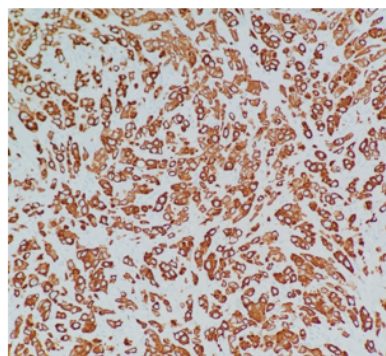
Lab work showed macrocytic anemia and thrombocytosis. Patient agreed to be evaluated by palliative medicine specialist.



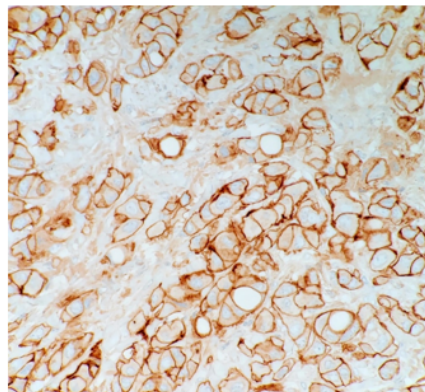
**Figure 3:** Gross picture of ulcerative skin/breast mass with superimposed bacterial infection for case report 2.



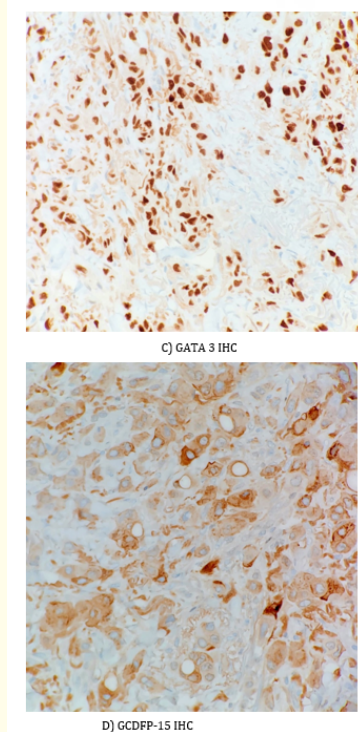
**Figure 4:** H E stain (10x and 40x Power), case report 2.



A) CK7 IHC



B) E Cadherin IHC



**Figure 5:** Immunohistochemical staining for case report 2.

## Discussion

Cutaneous metastasis from breast carcinoma can appear in a variety of different forms and may mimic other skin lesions [3,5]. The most common presenting form of cutaneous metastasis are nodules [7,11]. These nodules may be solitary or multiple, are in the subcutaneous tissue or dermis, and are firm [4,11]. Most of these nodules measure less than 2 cm in diameter [2]. The color of these nodules may range from pink to red brown, but they are usually the same tone as the skin [11]. Most nodules are asymptomatic and nontender; however some can ulcerate and get infected [11]. Carcinoma erysipelatoides, known as inflammatory metastatic carcinoma, presents as erythematous, tender, warm plaques with well-defined margins [6,11]. Infiltration of the neoplasm blocks lymphatics and leads to lymphedema, giving the skin the classic peau d'orange appearance [11]. Another form of metastasis is carcinoma en cuirasse, which may present on the chest wall as an extensive plaque with induration in the mammary region, often presenting post-mastectomy [1,6]. Telangiectatic metastatic carcinoma is characterized by papulovesicular lesions on top of an erythematous surface [5]. They are purple in color due to the dilated blood vessels and may lead to intense pruritis [5]. Alopecia neoplastica is a form of cutaneous metastasis that presents as circular lesions of alopecia on the scalp [1]. This presents very similarly and may be confused with alopecia areata [5,6]. Alopecia neoplastica however has marked induration when the lesion on the scalp is palpated [5]. Patients with a past medical history of cancer and presenting with a nondiscrete pattern of alopecia should be evaluated with a biopsy [6]. In most cases, the metastatic lesions occur in the skin over the area of the primary tumor or proximal to it [7]. The chest wall and abdomen are the most common sites affected by cutaneous metastasis [2,3,12]. Other sites on the body that may exhibit cutaneous metastasis are the back, upper arms, lower abdomen, perianal region,

and lower extremities [2,13]. Metastatic lesions may mimic many other disease processes such as erythema annulare, lupus erythematosus, herpes zoster, or a condyloma, so clinicians must have a high degree of suspicion in order to make a prompt diagnosis and initiate management and treatment [2]. A skin biopsy and histopathological examination is needed to confirm diagnosis of metastasis [3,6,14].

Treatment options vary widely and depend on individual patient presentation. In a majority of cases, the primary cancer of the cutaneous metastases is widespread and may not be amendable to treatment [7]. Systemic treatment of the malignancy with single or combination chemotherapy must be chosen carefully due to potential toxic effects [13]. Some of the most commonly used agents are trastuzumab and imiquimod [7,8,11]. Other treatment options are methotrexate, 5-fluorouracil, cyclophosphamide, and gemcitabine [11]. Ipsilateral recurrences may be treated with salvage mastectomies, though this depends on size of recurrence and the degree of lymph node involvement [13]. Management of the cutaneous metastasis revolves around palliative care of the skin and wound management [11,13]. Therapy options are guided by the size, location, and appearance of the wound, along with the lesion's characteristics and symptoms such as exudate, inflammation, and pain [13]. This includes keeping the lesions dry and clean [3,11]. Wounds with minimal exudate may be packed with dry, sterile gauze and covered with various nonadherent dressings to avoid further trauma to the lesion [13]. Debriding certain lesions may necessary if they are bleeding or crusted [3]. Electrochemotherapy can be used as palliative care for painful lesions that are difficult to treat with other modalities [11]. Photodynamic therapy is also a new procedure used for palliative care in cutaneous metastasis of breast cancer [6,11]. Controlling local skin metastasis may also be done through external beam RT (radiotherapy), though this form of treatment may not be an option in patients with previously irradiated areas [6,8,11,13]. Treating fungating masses and cutaneous lesions is not only important for optimizing quality of life by alleviating physical symptoms but is also beneficial to patients suffering from the psychological aspects and social isolation cutaneous wounds may cause [13].

The time between diagnosis of cutaneous metastasis and death of the patient ranges from 0.25 to 50 months, with a median of 5 months [2]. In approximately 7% of these cases, the interval from diagnosis to skin metastasis is more than 5 years [2]. Cutaneous lesions from breast cancer indicate widespread metastasis of the malignancy and thus has a poor prognosis [4,6,8,13]. However, cutaneous metastasis from breast cancer carries a more favorable long-term prognosis than metastases from other internal malignancies [2]. Compared to breast cancer, other internal malignancies that metastasize to the skin carry a 4.3-fold increase in relative risk of mortality [2]. Clinicians must have a high index of suspicion for cutaneous lesions, especially in patients with a previous history of breast cancer, regardless of stage of treatment or remission [2,14]. Though relatively uncommon, early recognition and diagnosis of cutaneous metastasis is important, as prompt treatment may improve outcomes and quality of life in patients [1,2,4,14].

### Conclusion

Cutaneous metastasis of cancer is uncommon, occurring in approximately 1% to 10% of metastatic forms of cancer. Breast cancer has the highest incidence of cutaneous metastasis, accounting for 30% of cutaneous metastasis of internal malignancies. Cutaneous involvement has been observed in 23.9% of breast cancer patients. Detailed history is crucial to be reported in the pathology requisition since this entity morphologically can mimic many pathological entities. Immunohistochemical evaluation is mandatory to prove the primary origin of the cutaneous metastasis.

### Disclaimer

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