Case Report

Cutaneous Metastasis as a Diagnostic Prelude in a 48-year-old Female

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Abstract

Cutaneous metastasis (CM) describes the spread of a distant primary tumor into the skin. The overall incidence of CM ranges from 5% to 10% with breast cancer having the highest rate in women. CM of breast carcinoma origin may manifest as erysipelas-like erythema on the chest, having distinct raised borders and edema due to lymphatic obstruction termed as carcinoma erysipeloides. In most cases, CM is recognized after the initial diagnosis of primary internal malignancy. However, in 0.6–1% of cases, CM served as the first presenting sign of malignancy. A 48-year-old female presented with multiple, erythematous patches, and plaques with clear-cut raised margins, some topped with violaceous pinpoint papules and nodules on the chest, abdomen, and back. No palpable breast mass was appreciated. There was noted nipple retraction and axillary lymphadenopathy. A 4-mm skin punch biopsy revealed nests of large pleomorphic cells on the papillary dermis admixed with mitotic figures and attempts of ductal formation. CK7 and CEA were positive. Results of ultrasonography and mammogram were highly suspicious of malignancy. Core needle biopsy of the breast mass revealed an invasive ductal carcinoma. In the context of an eczematous presentation on the chest area without palpable nodules or mass on breast examination, a diagnostic challenge is expected. Interestingly, our patient represents a small group of CM having cutaneous lesions as their primary manifestation. A high index of suspicion supplemented with proper clinicopathologic and radiologic correlation is crucial for the diagnosis of CM. A multidisciplinary referral is required for adequate management and overall survival rate.

Keywords: Breast carcinoma, carcinoma erysipeloides, cutaneous metastasis

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Introduction

Cutaneous metastasis (CM) describes the spread of a distant primary tumor into the skin with an overall incidence ranging from 5% to 10%.[1,2] Primary malignancy of the lung, colon, and breast may all lead to CM, with breast carcinoma having the highest rate at 23.9% among women.[3] Morphologic characteristics of CM vary and include solitary or multiple, asymptomatic, skin-colored, mobile, firm, round, or oval nodule(s).[1] Diagnostically, CM can be seen as the primary manifestation of a silent neoplasm or can indicate a malignancy relapse.[4] It may also appear as a first sign of malignancy as seen in breast carcinoma.[2] CM is often a result of lymphatic embolization or hematogeneous dissemination, hence, a generalized

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metastatic disease is expected making it a sign of poor prognosis.[5] Proper and early recognition of CM is, therefore, important for both clinicians and patients given its value in the management and prognosis of malignancy.[2]

Case Report

We present a case of a 48-year-old married female who sought consult at our institution with a chief complaint of erythematous and pruritic plaques. History started 2 years before consult when she noted few, sharply demarcated, erythematous, pruritic patches on the anterior chest. Lesions were noted to increase in size and number evolving to multiple, erythematous, pruritic plaques on the chest, abdomen, and back. The patient sought consult with a dermatologist where the diagnosis was undisclosed and was prescribed with unrecalled oral anti-fungal and topical medications with no noted improvement of lesions. There was no history of malignancy. The patient's past medical or family history was unremarkable. The patient is a nonsmoker and an occasional alcoholic beverage drinker.

On cutaneous examination, we describe multiple, erythematous patches, and plaques with well-defined raised margins, some with violaceous pinpoint papules and nodules on the chest, abdomen, and back [Figure 1]. No palpable nodules or masses were appreciated on examination of both breasts in all quadrants. Nipple retraction was noted on the left breast [Figure 1]. There was noted lymphadenopathy on the left axilla. Dermoscopy demonstrated homogeneous violaceous structureless areas and vascular patterns [Figure 2]. The rest of the physical examination findings were unremarkable.

Complete blood count and blood chemistry were requested and noted to be within normal limits. A 4-mm skin punch biopsy was taken from the violaceous papule on the left anterolateral chest wall. Histopathologic examination reported nests of large pleomorphic cells noted on the papillary dermis admixed with mitotic figures some within lymphovascular structures and attempts of ductal formation. These findings were consistent with atypical pleomorphic proliferation possibly malignancy. Immunohistochemical stains: cytokeratin 7 (CK7) and carcinoembryonic antigen (CEA) were both positive [Figure 3a-d].

Chest radiograph was unremarkable. Ultrasonography of the breast revealed right breast cyst, suspicious left breast lesion, and ipsilateral axillary node (BIRADS 4). Mammogram shows heterogeneously dense and nodular breasts, spiculated left retroareolar lesion with fine pleomorphic

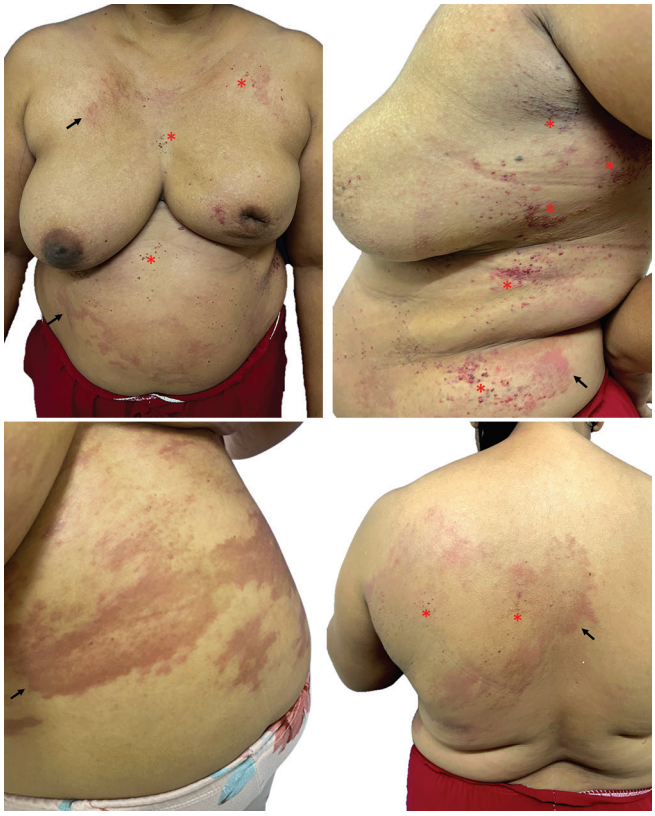

Figure 1: Clinical picture of multiple, ill-defined, erythematous plaques with clear-cut raised margins (black arrows), some topped with violaceous pinpoint papules (red asterisks) on the chest, abdomen, and back

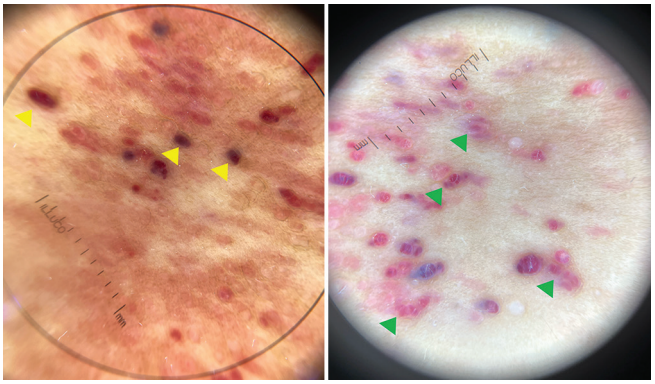

Figure 2: Dermoscopy of the lesions revealed homogenous violaceous structureless areas (yellow triangles) and vascular patterns (green triangles)

calcifications in segmental distribution (suspicious for malignancy). The patient was referred to surgery service for further evaluation and work-up for malignancy. FNAB of the suspected right breast mass showed only single duct with atypical epithelial lining and central necrotic material, hence, carcinoma-*in situ* cannot be totally ruled out. A core needle biopsy of the left breast mass was done, which revealed large round-to-oval cells invading the desmoplastic stroma with mixed tubule configuration

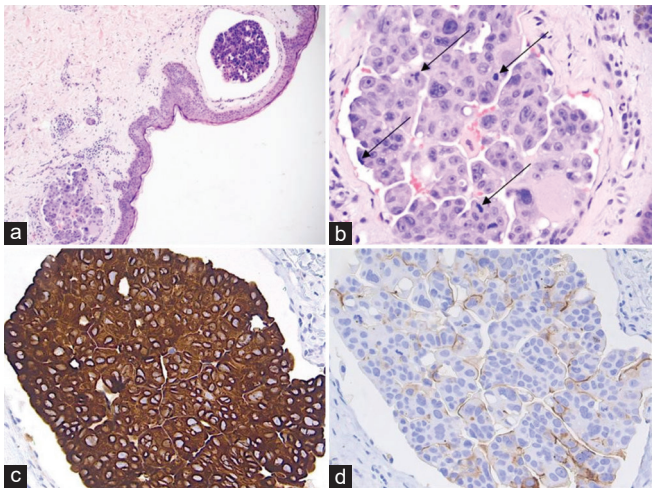

Figure 3: (a) Section showing nests of large pleomorphic cells on the papillary dermis some withing lymphovascular structures with attempts of ductal formation (H and E, ×10) (b) pleomorphic cells with mitotic figures (black arrows) (H and E, ×40) (c) Tumor cells highlighted by CK7, ×40 (d) and carcinoembryonic antigen, ×40 immunostains

in solid clustering. The cells are irregular with large hyperchromatic nuclei with scanty eosinophilic cytoplasm, prominent nuclei, brisk mitotic count, and moderate nuclear pleomorphism. The specimen was signed out as invasive ductal carcinoma. Clinicopathologic findings together with radiographic and cytologic findings confirm the diagnosis of CM with breast carcinoma as the primary tumor. As of this writing, the patient is being managed by an oncology service as a case of stage IV invasive ductal carcinoma of the breast with bone, liver, and CM and is undergoing chemotherapy.

Discussion

CM describes the spread of a distant primary tumor into the skin with an overall incidence ranging from 5% to 10%.[1,2] In patients presenting with CM, lung cancer was most commonly seen in men, while breast cancer was more common in women.[1] In a recent retrospective review of 11,418 patients with solid malignancy, 0.3% were diagnosed with CM and breast cancer was the most common primary cancer at 36%.[6] Skin metastases as a great masquerader, can be associated with pain or tenderness, or be asymptomatic. They usually present as a fast-growing dermal or subcutaneous nodule but can also mimic an eczematous reaction.[7] Similar to our patient, CM of breast carcinoma origin may manifest as erysipelas-like erythema in the chest, having distinct raised borders and edema due to lymphatic obstruction termed as carcinoma erysipeloides.[1,8] In most cases, CM is recognized after the initial diagnosis of primary internal malignancy, however, in 0.6%–1% of cases CM served as the first presenting sign of malignancy.[3]

A high index of suspicion along with proper clinicopathologic correlation is crucial for the diagnosis, management, and prognosis of patients with CM. Histologic characteristics of CM include deposits of pleomorphic cells, mitotic figures, and in cases of adenocarcinomas, exhibit gland formation, all of which were reported in our patient.[7] Patients with subtle histologic features may benefit with immunohistochemical studies and should be considered alongside clinical and radiologic findings. A positive CK7 and CEA, as seen in our patient, and a negative CK20 are expected immunohistochemical findings.[9] Additional markers may also aid in determining the origin of CM including thyroid transcription factor-1 (lung), human melanoma black-45 (melanoma), prostate-specific antigen (prostate), estrogen/progesterone receptors (breast), and chromogranin (neuroendocrine tumors).[1]

When surgically warranted, excision of the lesions with or without chemoradiotherapy is recommended to decrease tumor burden and improve quality of life.[7] Ultimately, the underlying primary tumor must be treated. However, in most cases including ours where the primary tumor is widespread with multi-organ involvement, the prognosis is generally poor with a mean survival rate of 20.6–23 months.[10] Interestingly, our patient represents a small group of CM having cutaneous lesions as their primary manifestation of malignancy.

In the setting of an eczematous lesion on the chest area without palpable nodules or masses on breast examination, a diagnostic challenge is expected. In the Philippines, a study by Dumlao *et al*. found a 95.6% concurrence rate of clinical and histopathologic diagnosis of CM. This is noted to be higher compared to similar studies in other countries.[11] The diagnostic value of histopathology alongside high index of suspicion by the dermatologist is paramount in the initial diagnosis, proper referral, and multidisciplinary management of such cases.

Conclusion

Dermatologists are at the forefront of recognizing cutaneous metastatic spread of an internal malignancy. A high index of suspicion augmented with proper clinicopathologic and radiologic correlation is a critical key in the diagnosis of CM. A multidisciplinary referral is required for adequate prognostication and management.

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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Conflicts of interest

There are no conflicts of interest.

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