

Review Article

## Clinical Morphological Diversity of Cutaneous Metastases of Breast Cancer

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**Abstract:** In women, breast cancer is the second most common type of cancer diagnosed; and breast cancer is the most common malignancy to metastasize to skin, comprising 30% of all cases of cutaneous metastases. Skin metastases result from skin infiltration due to cell proliferation from the initial tumor; The incidence of cutaneous metastases varies from 0.6 to 10.4% and can occur at any stage in the natural history of the disease. To date, a wide spectrum of cutaneous presentations have been described. We present our experience with the morphological patterns observed in our service during the last year.

**Keywords:** Breast Cancer, Metastases, Skin, Neoplasm, Carcinoma, Skin, Lesion.

## INTRODUCTION

Breast cancer is a heterogeneous disease [1, 2], is the second most common type of cancer diagnosed, and comprises up to 30% of all cases of cutaneous metastases [3]. Of these, 70% are from an infiltrating ductal carcinoma and 15% from a lobular carcinoma. The most common location of cutaneous metastases is on the chest ipsilateral to the primary breast malignancy, also the most common clinical features of cutaneous metastases from breast cancer reported are papules and/or nodules (80%), telangiectatic carcinoma (11%), erysipeloid carcinoma (3%), ‘en cuirasse’ carcinoma (3%), alopecia neoplastic (2%) and zosteriform pattern (0.8%). About 0.6% of cutaneous metastases are the first manifestation of the tumor [4].

They usually appear in the fifth or sixth decade of life and their presence is synonymous with disease rapidly progressive and survival time that ranges between 1 to 36 months depending on the type of tumor [5]. Cutaneous invasion occurs most frequently by direct extension or lymphatic spread, the hematogenous route being less common, another possible dissemination mechanism is direct implantation of tumor cells during a surgical procedure such as mastectomy or breast reconstruction [6].

A biopsy of the skin helps in confirming a diagnosis of tumor. The pattern noted and the microscopic appearance often suggests the likely tissue of origin. The histologic features of the metastases are similar to the primary tumor, although metastases may be more anaplastic and exhibit less differentiation [7].

Effective treatment depends on treatment of the underlying tumor. Palliative care is given if lesions are asymptomatic and the primary cancer is untreatable. This care includes keeping lesions clean and dry and debriding the lesions if they are bleeding or crusted. Hydrocolloid dressings may be used to help prevent secondary infection [7]. We present our experience with the morphological patterns observed in our service during the last year.

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### **Metastatic Nodular Carcinoma**

It is the most common clinical presentation and is characterized by superficial or subcutaneous nodules, single or multiple, pink to red in color, firm, rarely ulcerated [8]. The nodules can resemble different types of primary lesions and if they are unique, they can be confused with epidermal cysts, dermatofibromas and keratoacanthomas. Histological study shows nests of neoplastic cells at the level of the dermis, which usually respect the overlying epidermis [9].



**Figure 1: Metastatic nodular carcinoma: multiple, purplish and whitish nodules, some of them ulcerated, with irregular edges and a vegetative appearance**

### **‘En Cuirasse’ Carcinoma**

En cuirasse metastatic carcinoma is characterized by diffuse morphea-like induration of the skin. It is a fibrotic process resembling the encasement in armor of a cuirasse’ (cavalry soldier) [10]. Manifested by one or several subcutaneous nodules that may or may not be ulcerated, painless, that grow rapidly until they stabilize when they reach a certain size and may involve as the nodules fuse to form a shell [10]. Carcinoma en cuirasse is characterized histologically by dense fibrosis and decreased vascularity, making it highly resistant to chemotherapy [11].



**Figure 2: ‘En cuirasse’ carcinoma: Erythematous-violaceous plaque with whitish regions of nodular, sclerodermiform appearance**

### Zosteriform Pattern

Skin metastases with zosteriform distribution from internal malignancies or primary skin cancer are infrequent [12]. The mechanism of zosteriform distribution in metastatic skin cancer remains unknown. It has been suggested that it might be due to a Koebner-like reaction at the site of a prior herpes zoster infection, or neural lymphatic spread via the fenestrated vessels of the dorsal root ganglion, accidental surgical implantation, or perineural lymphatic spread [13].



**Figures 3 and 4: Zosteriform pattern: Erythematous-edematous plaque characterized by papulovesicular nodules distributed in dermatome T2-T6, simulating herpes zoster**

### Paget's Disease

Paget's disease is described as a syndrome including ulceration of the nipple, associated with an underlying cancer; clinically it presents with changes in the areola-nipple complex, such as pruritus, erythema, peeling, ulceration, bloody discharge, palpable mass, and hyperpigmentation of the nipple-areola [14]. It is common to find associated neoplasia even in patients who clinically do not present a palpable mass and with a benign mammographic appearance [15].

Two theories have been proposed regarding pathogenesis of Paget's disease: epidermotropic theory and *in situ* malignant transformation theory. The first theory claims that changes typical for Paget's disease arise in the ductal cells, and spread along the basement membrane to the nipple. This theory is supported by the fact that most patients with Paget's have underlying breast cancer, and the cells from the nipple are histologically similar to the associated invasive carcinoma. The *in situ* malignant transformation theory claim holds that Paget's disease originates in the epidermal cells of the nipple by malignant transformation of keratinocytes and is not associated with any coexisting neoplastic process in the affected breast [16].



**Figure 5: Paget's disease: Scaly, crusty plaque with an erythematous halo in the nipple-areola region**

## CONCLUSION

Breast cancer is one of the most frequent malignant tumors that affects the female population and entails high morbidity and mortality, as a result of the primary tumor and for its high capacity to produce distant metastases. Cancer metastasis represents the most devastating aspect of malignancy since mortality of tumor patients is mainly related to the metastatic behavior of the primary neoplasm. Breast carcinoma can present with different morphologies; skin lesions can mimic other conditions, potentially causing breast carcinoma to go unnoticed. Therefore, understanding the various presentation morphologies is essential.

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