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Title

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Journal

Dermatology Online Journal, 22(3)

Authors

Gaitan-Gaona, Francisco
Said, Mirra C
Valdes-Rodriguez, Rodrigo

Publication Date

2016

DOI

10.5070/D3223030377

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Peer reviewed

Photo Vignette

Cutaneous metastatic pigmented breast carcinoma

Francisco Gaitan-Gaona¹, Mirra C Said², Rodrigo Valdes-Rodriguez²

Dermatology Online Journal 22 (3): 17

¹Pathology Department, Hospital General de Soledad, San Luis Potosi, Mexico.

²Dermatology Department, Temple University School of Medicine, USA.

Correspondence:

Francisco Gaitan-Gaona
Department of Pathology
Hospital General de Soledad
Prolongación Valentine Amador 1112,
Col. Rivas Guillen, San Luis Potosí, México
CP78432
pan.chisco@hotmail.es

Abstract

A 66-year-old woman presented with a 3 cm black, ulcerated nodule located on the skin of the upper abdomen, just below the breast. The lesion was painful to the touch, but the patient reported no other associated symptoms and was otherwise healthy. A 4-mm punch biopsy of the affected skin was obtained and the histological diagnosis was cutaneous metastatic pigmented breast carcinoma.

Keywords: pigmented breast carcinoma, melanoma.

Case synopsis

A 66-year-old woman presented with a pigmented nodule after being referred for suspicions of malignant melanoma. The lesion had been evolving for a period of eight months. A physical exam revealed a 3 cm black, ulcerated nodule located on the skin of the upper abdomen, just below the breast (Figure 1). The lesion was painful to the touch, but the patient reported no other associated symptoms and was otherwise healthy. A 4-mm punch biopsy of the affected skin was obtained and sent to pathology for evaluation.

Histopathological examination revealed a dermal tumor with epidermotropism and glandular differentiation (Figure 2a). The tumor cells are larger and pleomorphic, their nuclei have prominent nucleoli, and there are dusty melanin particles in the cytoplasm (Figure 2b). Focally there are dendritic melanocytes between the neoplastic cells and the stroma (Figure 2c). Immunohistochemistry showed that the neoplastic cells were positive for estrogen receptors and progesterone receptors, but were negative for HMB-45.



Figure 1. 3 cm black, ulcerated nodule located on the skin of the upper abdomen, just below the breast

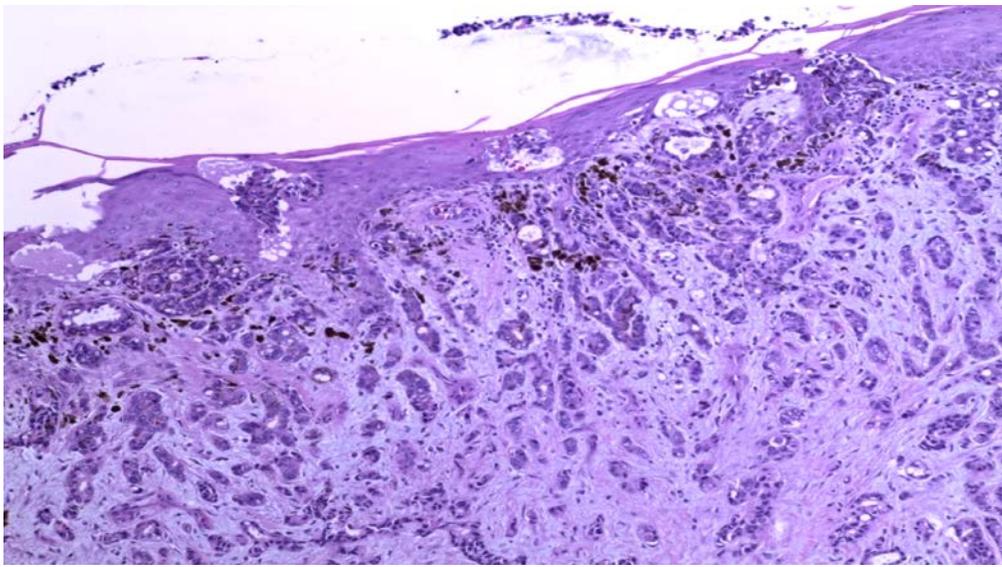


Figure 2a. Dermal tumor with epidermotropism (hematoxylin-eosin, original magnification $\times 4$)

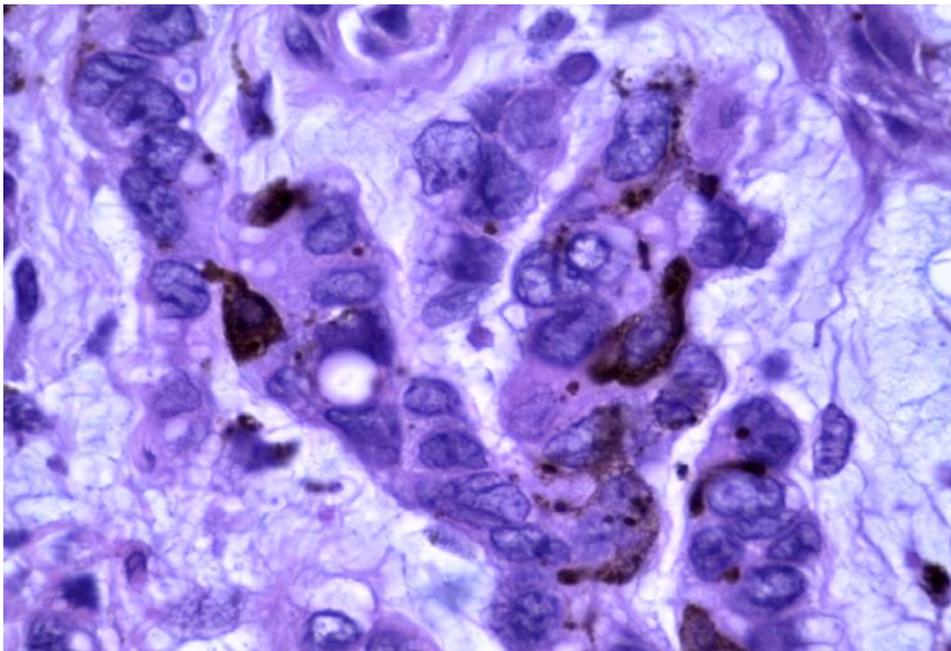


Figure 2b. Neoplastic cells with melanin particles in the cytoplasm (hematoxylin-eosin, original magnification $\times 40$)

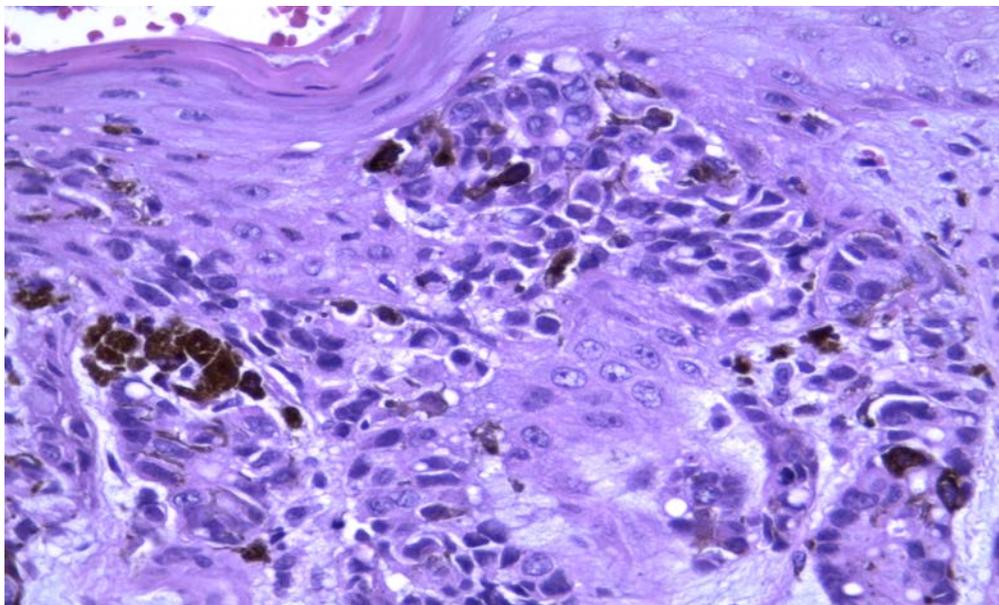


Figure 2c. Melanocytes and melanin between the neoplastic cells (hematoxylin-eosin, original magnification $\times 10$)

The patient was referred to a gynecologist for a breast exam. Mammography showed a tumor in the right breast that was classified as BI-RADS 5. Findings at biopsy of the right breast showed invasive ductal carcinoma. The patient underwent a mastectomy, Madden type, and subsequently received radiotherapy and chemotherapy. The patient is currently free of disease.

Discussion

In the medical literature, breast carcinoma pigmentation is rare, with the first case being documented in 1977 [1]. It is crucial to differentiate pigmented breast carcinoma from melanoma, as they share many common traits and can rarely be diagnosed by clinical exam only [2].

Breast carcinoma can metastasize to the skin and simulate a melanoma owing to melanocytic colonization and heavy melanin deposits between and within neoplastic cells. This phenomenon occurs when the carcinoma cells metastasize to the skin, causing epidermal-dermal and melanocyte damage (pigmentary incontinence) [1].

Other theories used to explain the mechanism of melanin pigmentation include pigmentation caused by chemotactic factors produced by the neoplastic cells [3] or dendritic transfer of melanin from melanocytes to carcinoma cells [4].

Initially, we considered clinical diagnoses of pigmented seborrheic keratosis or melanoma. Seborrheic keratosis is a common benign condition in adults appearing in the form of a black or brown plaque. Although it can resemble cancer, it is benign and requires no treatment, unless it becomes irritated. The presence of the ulcer, however, was unusual, so we also considered the possibility of malignancy. The biopsy was performed to investigate the nature of the plaque and rule out the possibility of melanoma.

Histology showed the arrangement of infiltrating cells in duct-like structures and the presence of mucin within the tumor cells, favoring a diagnosis of carcinoma. Melanoma neoplastic cells usually originate from the epidermis and infiltrate the dermis in sheets; deposits of melanin inside the cells are more intense than in the carcinoma. The presence of estrogen and progesterone receptors was an indication of breast cancer. The negative HMB-45 result helped to rule out melanoma and confirm the diagnosis of cutaneous metastatic breast carcinoma with melanocyte colonization.

The patient's visit to the gynecologist reaffirmed the suspicions of breast carcinoma. Mammography results are most often reported on the BI-RADS scale from zero to six, zero meaning negative and six meaning definitive malignancy. The patient's BI-RADS was five on the right breast. The biopsy revealed invasive ductal carcinoma, which is the most common form of breast carcinoma. Far less common was the pigmentation of the carcinoma in this case.

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