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Authors
Reusser, Nicole M
Wu, Wesley
Mir, Mohsin

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Case presentation

Zosteriform metastasis of rectal adenocarcinoma: a case report

Nicole M. Reusser BA[1], Wesley Wu MD[2], Mohsin Mir MD[2]

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[1]The University of Texas Health Science Center at Houston, Houston, Texas

[2]The Department of Dermatology, Baylor College of Medicine, Houston, Texas

Correspondence:

Nicole M. Reusser, B.A.
The University of Texas Health Science Center
6431 Fannin St
Houston, Texas 77030
Email: Nicole.m.reusser@uth.tmc.edu
Phone: 713-412-0445

Abstract

Cutaneous metastases manifesting as zosteriform eruptions are uncommon. To our knowledge, we report the second case of zosteriform cutaneous metastasis arising from a rectal carcinoma in a 58-year-old man who presented with a painless popular eruption in the T12 dermatomal distribution nine months after his primary diagnosis of rectal carcinoma was made. Furthermore, we discuss a review of the literature regarding zosteriform cutaneous metastases and the possible pathogenesis of these lesions.

Keywords: cutaneous metastasis, zosteriform metastasis, colorectal adenocarcinoma

Introduction

Zosteriform cutaneous metastases are exceedingly rare, and usually carry a poor prognosis in the setting of diffuse disease. We report a case of a patient who developed a zosteriform cutaneous metastasis on the abdomen nine months after initial diagnosis of a rectal carcinoma. Only one other case report of zosteriform cutaneous metastasis from rectal carcinoma has been published to date. Herein, we summarize the features of patients with zosteriform cutaneous metastases and discuss the mechanisms of the morphology and distribution of this rare metastatic variant.

Case synopsis

A 58-year-old man was referred for evaluation of a worsening skin eruption on the right lower abdomen for four weeks. He had a 9-month history of advanced rectal adenocarcinoma, treated with chemotherapy, radiation, and a diverting loop colostomy. The asymptomatic eruption did not respond to valacyclovir given by the patient's oncologist. No prior history of herpes zoster was elicited.

Physical exam revealed non-tender, erythematous, hyperpigmented, firm papules and plaques on the right lower abdomen in a T12 dermatomal distribution (Figure 1). A cutaneous biopsy revealed clusters of large, pleomorphic cells forming glandular structures throughout the dermis (Figures 2). Immunohistochemical staining was positive for CK20 and CDX2 and negative for CK7 (Figure 3). Moreover, atypical glandular malignant cells within the dermal lymphatics as well as the vessels were present (Figure

4). The morphology and staining pattern of the tumor cells were consistent with the patient's previously biopsied rectal carcinoma, confirming the diagnosis of a zosteriform cutaneous metastasis.

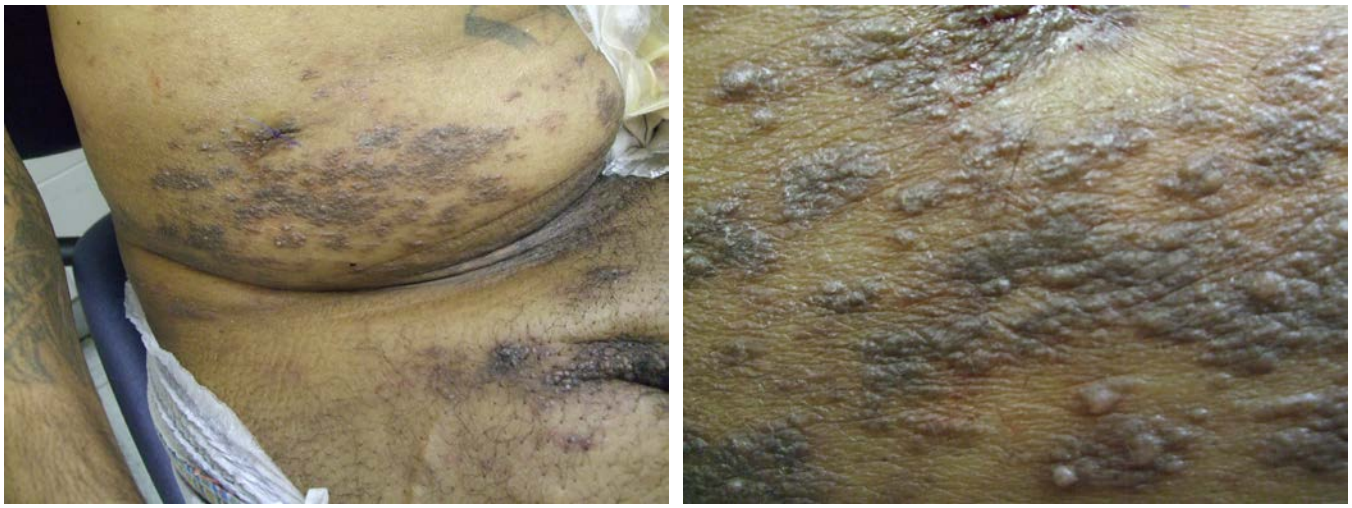

Figure 1 (a and b). Clinical photographs at distant (a) and close (b) perspectives demonstrate erythematous and hyperpigmented papules and plaques on an erythematous base in a distribution following the T12 dermatome.

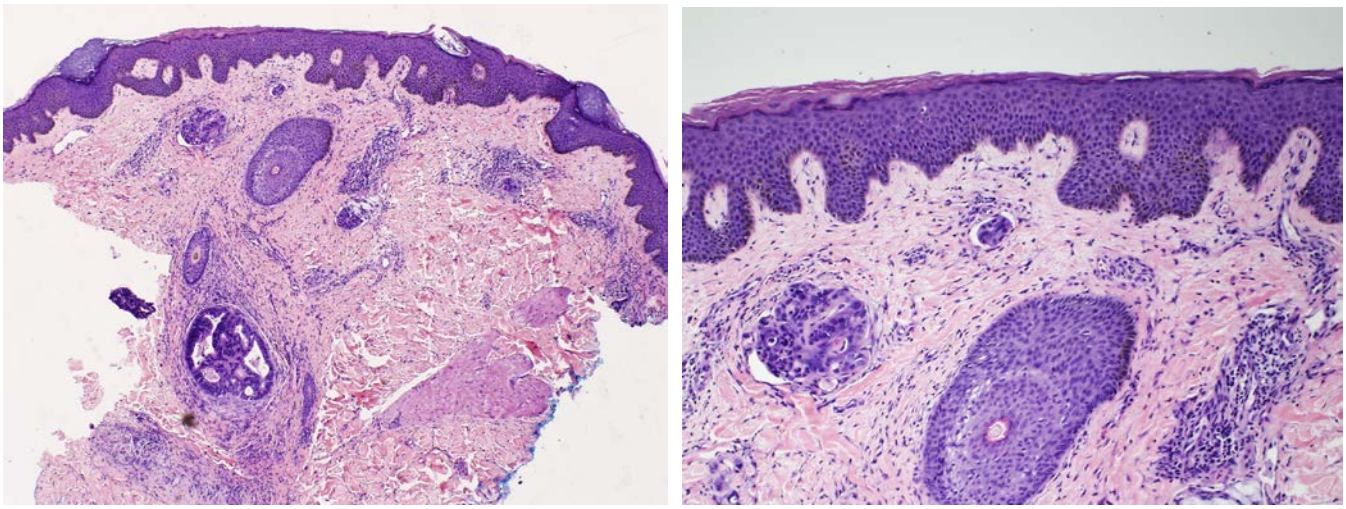

Figure 2 (a and b). Lesional biopsy at 40X (a) and 100X (b) magnifications demonstrates metastatic rectal adenocarcinoma after hematoxylin and eosin staining. Malignant epithelioid cells permeate lymphatic channels and form complex and cribriform glands in the papillary and superficial reticular dermis. These malignant cells demonstrate increased nuclear cytoplasmic ratios with coarse chromatin, irregular nuclear membranes, abnormal mitotic figures, and occasional prominent nucleoli. The glandular structures contain cells with elongated nuclei and foci of coagulative necrosis, suggestive of a metastatic adenocarcinoma.

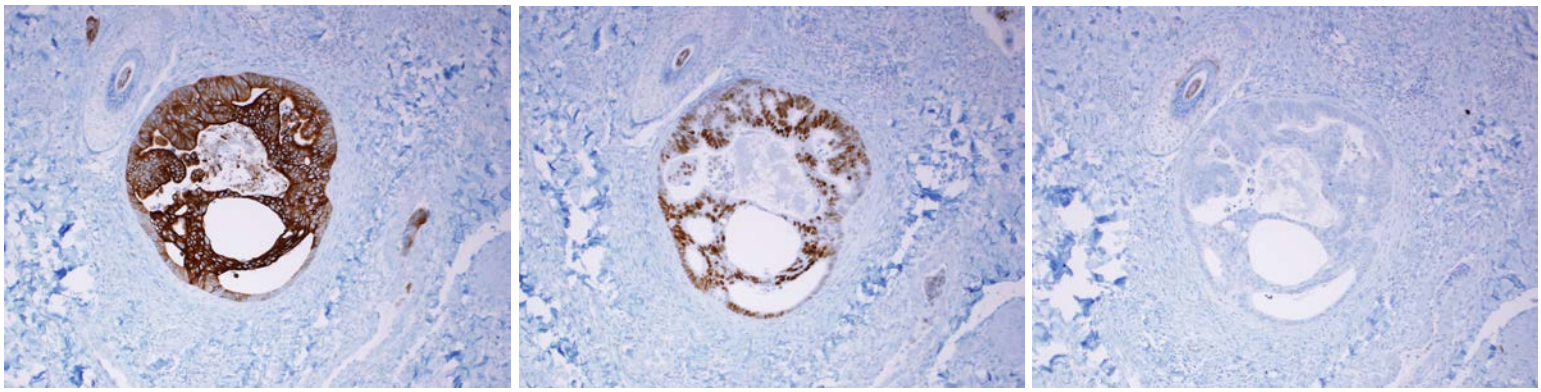

Figure 3 (a, b and c). Immunohistochemical profiling of lesional cells at 200X magnification show the typical staining pattern of primary colorectal adenocarcinoma. There is a strong positive membranous staining of CK20 (a) and a positive nuclear staining of CDX2 (b) of the atypical glandular cells within the dermis. Alternatively there is a grossly negative staining for CK7 (c) throughout the specimen.

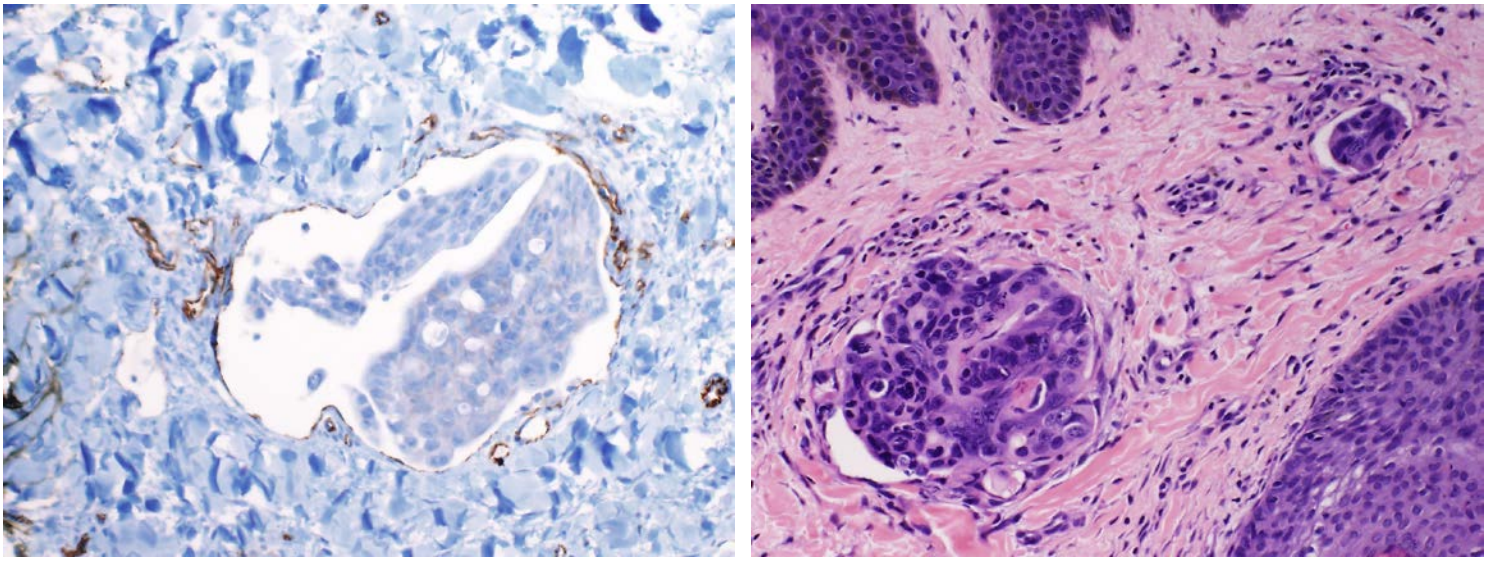

Figure 4 (a and b). Lesional biopsy at 400X (a) and 200X (b) magnifications demonstrate metastatic rectal adenocarcinoma with emboli/thrombi of malignant cells within the vascular and lymphatic system. Immunohistochemical staining with CD31 (endothelial cell marker) demonstrates atypical glandular cells within a dermal vessel. Similarly atypical glandular cells are noted within a dermal lymphatic vessel (b).

Discussion

Unilateral zosteriform metastasis has been reported with lymphoma [1], prostatic carcinoma [2], adenocarcinoma of the lung [3, 4], transitional cell bladder carcinoma [5], breast adenocarcinoma [6], and colorectal adenocarcinoma [7, 8]. Although commonly a late manifestation as in our patient, zosteriform skin metastasis has been reported as the first sign of the underlying carcinoma in a small proportion of these patients.

The frequency of skin metastasis of colorectal carcinoma is low and has been reported to be 2.3-6% [9, 10]. Cutaneous metastases are generally considered to be a late manifestation associated with a dismal prognosis, with an average survival of approximately 18 months after diagnosis [11]. The most frequent site of cutaneous metastasis is the abdominal skin, often on prior surgical incision scars [12]. Histologic features of metastatic lesions generally resemble those of the primary tumor. However, metastases are frequently more anaplastic [13], have a nodular configuration, and are located in the dermis, with subsequent spread to the epidermis and subcutaneous tissue [14].

For colorectal carcinoma, the most frequently used immunohistochemical markers include cytokeratin (CK) 7, CK20, and CDX2. CK7 is found in many ductal and glandular epithelia, including lung and breast [15], whereas CK20 is expressed in the gastrointestinal epithelium and urothelium [16]. The combined expression patterns of CK7 and CK20 have been extensively studied, with the CK7-/CK20+ pattern being highly characteristic of colorectal carcinoma [17, 18]. An even more sensitive marker for colorectal carcinoma is CDX2, a critical nuclear transcription factor for intestinal development [19], which is expressed in normal and neoplastic intestinal epithelial cells. One study of these markers reported a specificity of 96.7% and a sensitivity of 63.6% when using the CK7-/CK20+ phenotype for predicting colorectal adenocarcinoma, whereas a specificity of 54.9% and sensitivity of 96.6% was reported for the CDX2 marker [18]. As seen in our patient, the lesional biopsy was CK7-/CK20+ and CDX2+.

The preferred treatment option for isolated cutaneous metastatic lesions is wide local excision. However, in the case of extensive cutaneous metastases only palliative treatment is recommended [13]. Established chemotherapy treatments include 5-fluorouracil (5-FU), capecitabine, irinotecan, oxaliplatin, and cisplatin. Certain combinations have increased the median survival time to greater than 20 months, including oxaliplatin with infusional 5-FU and leucovorin (FOLFOX) with irinotecan (FOLFIRI) [19].

Identifying zosteriform cutaneous metastasis is critical. Lesions are typically painless papules or nodules with occasional ulceration and bleeding. However, papules, nodules, verrucous papules, and vesicobullous herpetiform lesions have also been seen [1, 20]. In some cases, vesiculobullous lesions are the initial manifestation of a zosteriform metastasis, and may rapidly progress to solid papulonodular lesions. Lymphedema [3], mucin production of the neoplastic cells [7], and epidermotropic metastasis [21] may contribute to its pathogenesis. Patients with persistent vesicobullous eruptions tend to survive longer, from many months to years, compared to those with papulonodular or verruca-like lesions.

Although dermatomal, more evidence exists presently for hematogenous and lymphatic spread of cancer cells rather than for perineural invasion. A previous case report noted a negative S100 staining of a zosteriform metastasis. However, dilated vessels in the dermis, some of which contained malignant cells, suggested that the distribution was related to intravascular or lymphatic spread [22]. Tissue swelling, clinically, and enlarged lymphatic vessels with focal neoplastic emboli, histopathologically, have also been reported [6, 23, and 24]. The histopathology of our patient showed atypical malignant cells in both the dermal vessels and lymphatics, suggesting a progressive mechanism of metastasis from lymphatic or hematogenous spread or a combination thereof.

A Koebner-like phenomenon may account for the dermatomal distribution. In patients with a prior history of herpes or zoster, diminished immune resistance of the skin may propagate tumor cells [25-27]. Additionally, virally induced neural alteration may lead to increased receptivity to metastatic cell homing [28].

Conclusion

Although rare, zosteriform cutaneous metastasis is a poor prognostic sign and should not be misdiagnosed. Internal malignancy should be considered in those patients with refractory zosteriform lesions, especially in those with pertinent oncological history. Future studies are needed to elucidate its pathogenesis.

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