

Zosteriform Eruption on the Chest and Abdomen

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A 50-year-old man presented with erythematous macules and papules with a dermatomal distribution on the left thoracic region with associated pain of 3 weeks' duration. The lesions persisted after treatment for herpes zoster. His medical history was notable for mesothelioma that was diagnosed 6 years prior and was treated with ipilimumab and nivolumab following multiple lines of chemotherapy and investigational agents, left thoracotomy, extrapleural pneumonectomy, diaphragmatic reconstruction, and left chest radiation. His medical history also included Hodgkin lymphoma diagnosed 36 years prior that was treated with an appendectomy, splenectomy, systemic chemotherapy, and radiation. Three weeks prior to the current presentation, he was treated by oncology with valacyclovir 1 g 3 times daily for 7 days for presumed herpes zoster without improvement. Physical examination revealed the absence of vesicles, as well as firm, 1- to 6-mm, erythematous papules and plaques, including a few outside of the most affected dermatomes.

WHAT'S YOUR DIAGNOSIS?

- cutaneous metastatic mesothelioma
- cutaneous Rosai-Dorfman disease
- herpes zoster granulomatous dermatitis
- radiation recall dermatitis
- zosteriform lichen planus

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The authors report no conflict of interest.

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THE DIAGNOSIS:

Cutaneous Metastatic Mesothelioma

Biopsies of the larger erythematous papules revealed an infiltrate of atypical tumor cells with mitoses (Figure 1) that were immunoreactive for calretinin (Figure 2) and lacked nuclear *BRCA1* associated protein-1, *BAP1*, expression (not shown). The patient's prior mesothelioma was re-reviewed, and the cutaneous tumor cells were similar to the primary mesothelioma. A diagnosis of cutaneous metastatic mesothelioma (CMM) was made.

Mesothelioma is a rare neoplasm arising from the pleura, pericardium, peritoneum, and tunica vaginalis,¹ with an estimated annual incidence of 2500 cases.² The predominant risk factor for the development of pleural mesothelioma is asbestos exposure, which has been identified in up to 90% of cases. Mesothelioma can give rise to local and less frequently distant hematogenous metastases. Cutaneous involvement of mesothelioma is rare.³ More than 80% of CMM cases are attributed to seeding the skin at procedure sites or by direct infiltration of scars. Distant CMM is rare and typically presents as

subcutaneous nodules.⁴ Few cases of inflammatory CMM have been published,^{1,4,5} with even fewer mimicking herpes zoster infection (HZI), as seen in our patient.

The most specific stain for mesothelioma is calretinin, which strongly and diffusely stains both the nucleus and cytoplasm. Other markers include Wilms tumor 1, cytokeratin 5/6, thrombomodulin, and HBME-1. Immunohistochemistry to detect the loss of *BAP1* staining in the nucleus is important for differentiating between mesothelioma and mesothelial hyperplasia.³

Cutaneous metastases occur in 0.7% to 9% of patients with internal malignant disease. Most commonly, cutaneous metastases present as cutaneous nodules, though other reported inflammatory presentations include erysipeloïdes, generalized erythematous patches, telangiectasia, and zosteriform distributions.⁶ Zosteriform distributions are particularly rare and most commonly are due to breast carcinomas or lymphomas. The mechanism of zosteriform metastasis is unknown, but theories include tumoral spread along vessels, invasion of the thoracic perineural sheaths, localized spread of tumor cells from a surgical site, or a Koebner-like reaction at the site of an existing HZI. Regardless of primary tumor type or presentation, cutaneous metastasis is a poor prognostic sign, with survival rates varying based on primary tumor type.⁷

Other differential diagnoses include herpes zoster granulomatous dermatitis, radiation recall dermatitis, cutaneous Rosai-Dorfman disease, and zosteriform lichen planus, all of which have been reported after HZI.⁸⁻¹⁰ Herpes zoster granulomatous dermatitis typically presents weeks to years after acute HZI with erythematous to violaceous papules and plaques at the site of the prior HZI. A biopsy reveals interstitial granulomatous dermatitis and multinucleated giant cells.⁸ Radiation recall dermatitis is a cutaneous inflammatory reaction limited to regions of prior radiation exposure after the administration of a triggering medication. Radiation recall dermatitis can present days to many years after the completion of treatment.⁹ Although the eruption in our

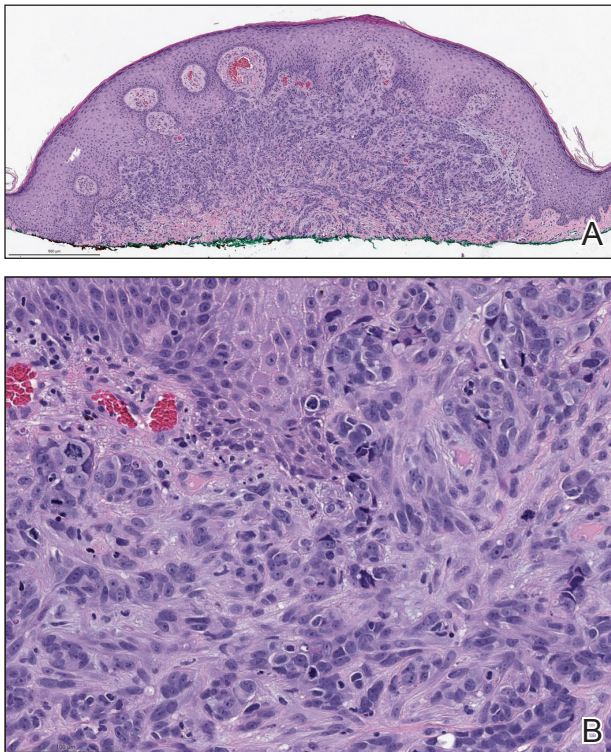


FIGURE 1. A, A shave biopsy of the left chest revealed infiltration of the dermis by a proliferation of spindle and epithelioid cells (H&E, original magnification $\times 40$). Reference bar indicates 500 μm . B, The tumor cells showed marked nuclear atypia, and several mitoses were seen with calretinin staining (original magnification $\times 40$). Reference bar indicates 100 μm .

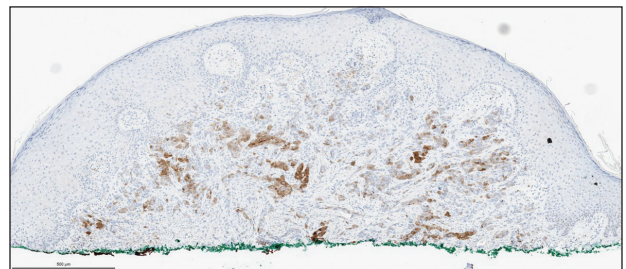


FIGURE 2. Immunohistochemistry showed tumor cells that were positive for calretinin (original magnification $\times 40$). Reference bar indicates 500 μm .

patient was at the site of prior radiation, the pathologic and clinical presentation was not consistent with radiation recall dermatitis. Cutaneous Rosai-Dorfman disease is a non-Langerhans cell histiocytosis that may present as either solitary or numerous papules, plaques, or nodules and has been reported to occur after HZI. Biopsy reveals a diffuse dermal histiocytic infiltration with plasma cells and lymphocytes. In contrast to metastatic disease, mitoses and nuclear atypia are rare in cutaneous Rosai-Dorfman disease.¹¹ Lichen planus is an inflammatory disease of unknown etiology presenting as flat-topped, violaceous, pruritic papules¹² that may present in a zosteriform pattern.¹³

Although it is uncommon, metastatic spread should be considered in patients with known malignancy presenting with zosteriform eruptions.² Our patient remained on treatment with immunotherapy, as he was unable to undergo additional radiation and had failed multiple other lines of therapy. He died 3 months after presentation.

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