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Metastatic lung cancer mimicking varicella-zoster virus

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Abstract

Cutaneous metastases from lung adenocarcinoma are rare and usually signify advanced disease with a poor prognosis. This case describes a 63-year-old woman with stage IV lung adenocarcinoma who presented with a painful, initially unilateral, rash on her breast. The clinical appearance of erythematous plaques with vesiculo-papules suggested disseminated herpes zoster, leading to the initiation of intravenous acyclovir. However, histopathology revealed atypical epithelial cells consistent with cutaneous metastasis from the primary lung carcinoma. Although cutaneous metastases from lung cancer typically present as nodules, zosteriform skin metastases are extremely rare. This case is a unique instance of bilateral zosteriform skin metastases from lung carcinoma, underscoring the importance of considering cutaneous metastasis in patients with atypical skin lesions and underlying malignancy. Early recognition and accurate diagnosis are crucial for patient management and prognosis.

Keywords: adenocarcinoma, zosteriform eruptions, cutaneous metastases

Introduction

Cutaneous metastases originating from lung carcinoma are a rare phenomenon, with a reported incidence ranging from 1% to 12% [1]. Skin metastases from lung carcinoma most frequently manifest on the chest, abdomen, head, and neck [2]. The prognosis for individuals with skin metastasis is typically poor, given that the

involvement of other organs, including the brain, liver, and bones is often present at this point as well [1]. The clinical presentation of skin metastases can vary, with nodules being the most typical [1]. However, unusual presentations, such as zosteriform metastases, occur and can pose diagnostic challenges, especially in immunocompromised patients. Herein, we present a 63-year-old woman with stage IV lung adenocarcinoma who presented with a painful zosteriform eruption on the chest and breasts that was concerning for herpes zoster infection.

Case Synopsis

A 63-year-old woman with stage IV lung adenocarcinoma presented with a painful dermatomal eruption on her breast that was initially unilateral but progressively worsened to become bilateral. Physical examination revealed erythematous plaques with overlying tense vesiculo-papules on the central chest and breasts (**Figures 1, 2**).

Owing to the initial differential diagnosis including the possibility of disseminated zoster in an immunocompromised patient, treatment with intravenous acyclovir was initiated while awaiting skin biopsy results. However, histologic evaluation revealed atypical epithelial cells within the papillary dermis infiltrating between collagen bundles and abutting the epidermis (**Figure 3**). The tumor was focally positive for thyroid transcription factor 1,

confirming cutaneous metastases from primary lung carcinoma (**Figure 4**).



Figure 1. Initial unilateral zosteriform-like presentation of erythema, vesicles, and papules on breast.



Figure 2. Evolution to bilateral zosteriform-like presentation on central breast.

Case Discussion

Cutaneous metastases occur in nearly 10% of oncology patients, with lung and breast cancers being the most common [3]. There are many descriptions in the literature describing cutaneous metastasis of breast cancer presenting with painful zoster-like papulovesicles mimicking herpes zoster infection [3, 4]. However,

zosteriform skin metastases (ZSM) from lung cancer have been exceptionally rare in literature, with only a handful of reported cases [5,6]. All

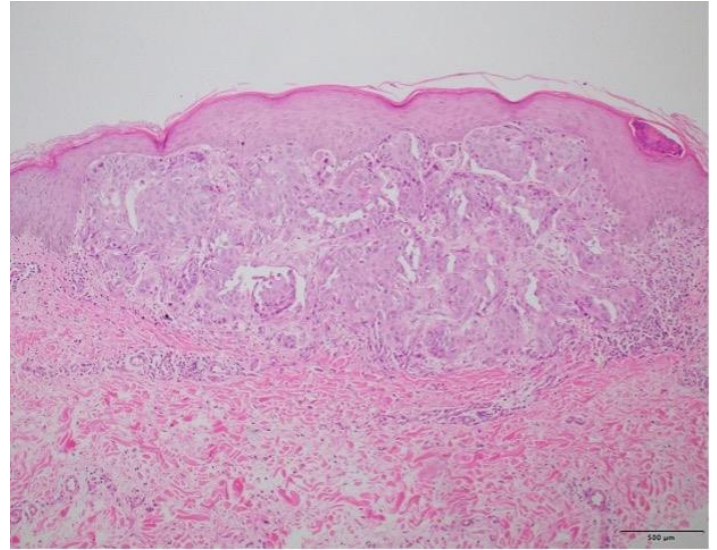


Figure 3. Hematoxylin and eosin stain showing atypical epithelial cells within the papillary dermis infiltrating between collagen bundles.

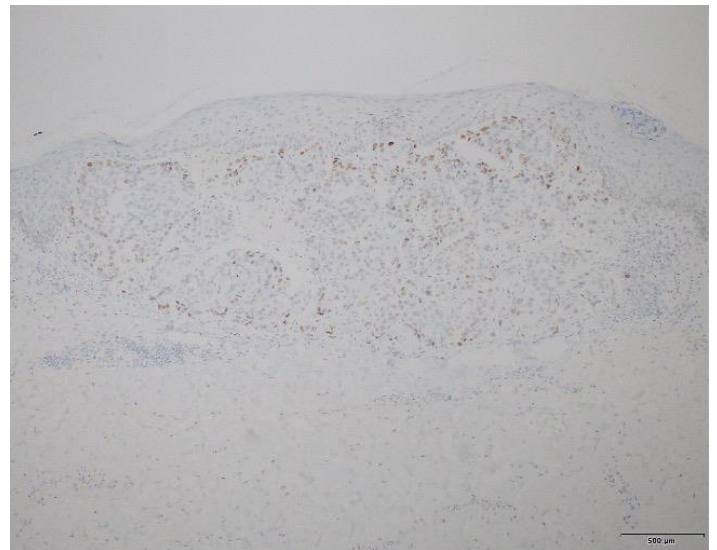


Figure 4. Focally positive thyroid transcription factor 1 stain.

previously reported cases of ZSM arising from lung cancer were located on the chest wall [5]. Notably, there is no significant difference between the histologic type of lung cancer in the development of skin metastases [1,2]. Currently, multiple theories exist regarding the underlying etiology of ZSM. One posits a Koebner-like reaction at the site of past varicella-zoster virus infection or previously damaged skin whereas the other speculates on the retrograde movement of cancer cells through

vessels causing either perineural spread or infiltration of the dorsal root [3,6].

Thyroid transcription factor 1 is a staining marker that is commonly expressed in lung adenocarcinomas and small cell lung carcinomas. When positive, it helps distinguish primary lung adenocarcinomas from metastatic adenocarcinomas originating elsewhere [7,8]. In patients with lung adenocarcinoma, thyroid transcription factor 1 expression may also predict a better prognosis [9]. Although thyroid transcription factor 1 can be positive in various thyroid cancers, further testing was not necessary in this case, as the patient's diagnosis of stage IV lung adenocarcinoma was already established prior to her presentation.

Although herpes zoster typically presents unilaterally, rare bilateral presentations can occur. Bilateral symmetric herpes zoster is an uncommon condition in which the rash crosses the midline in an uninterrupted pattern, deviating from the classic unilateral distribution [10]. In contrast, herpes zoster bilateralis involves two separate, nonsymmetrical, bilateral dermatomes. Both presentations are rare and mainly reported in immunocompromised patients, although a few cases have also been observed in immunocompetent individuals [10].

Conclusion

Although varicella-zoster virus and zosteriform presentations are most commonly unilateral, it is essential to acknowledge that they may also manifest bilaterally, particularly in immunocompromised patients. To our knowledge, this is the first documented case in the literature of ZSM presenting bilaterally from primary lung carcinoma. In conclusion, this case serves as a reminder that cutaneous metastases can manifest in atypical ways. It is imperative for healthcare providers to maintain a high index of suspicion and consider the possibility of

cutaneous metastases in any patient with an underlying malignancy.

Potential conflicts of interest

The authors declare no conflicts of interest.

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