



## Case report

## Zoster-like cutaneous metastatic adenocarcinoma of the lung: A case report



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## ABSTRACT

The zosteriform pattern is an infrequent cutaneous finding in oncologic patients who have a skin metastasis from a different primary source. Herein we report a case of adenocarcinoma of the lung which presented with zoster-like lesions along the thoracic dermatome. The histopathology indicated a metastatic neoplasm with variable glandular formations. Immunohistochemistry results pointed to the diagnosis of metastasized lung cancer. We suggest physicians should consider this rare diagnosis when experiencing similar cases.

## 1. Introduction

Cutaneous metastases from non-small cell lung cancer occur in approximately of 2.8% of cases [1]. The most common finding is a single nodule located on the scalp, and squamous cell carcinoma is the most common histological subtype [2]. Zosteriform metastasis is a highly rare pattern which has only rarely been reported [3,4]. Herein we present the case of a patient with adenocarcinoma of the lung who developed zosteriform lesions on his left chest wall and demonstrate the role of the thyroid transcription factor-1 (TTF-1) marker in making the diagnosis.

## 2. Case report

A 68-year-old Asian male presented with areas of large red plaques each containing numerous vesicles on his left chest wall without any other symptoms for three months. One year earlier, he had been diagnosed with adenocarcinoma of the lung, which had metastasized to his spine and pleura. He had received treatment with multiple courses of chemotherapy, palliative spine irradiation and many medical pleurodeses in both lungs. At the current visit, his physical examination showed localized, well-defined erythematous indurated large plaques with some vesicles, nodules, and crust along the left T4 dermatome on the anterolateral chest wall (Fig. 1).

A skin biopsy showed mild irregular acanthosis of the epidermis. A sheet of tumor cells with variable glandular formations was seen in the dermis and within dilated lymphatic vessels (Fig. 2). Hyperchromatism, prominent nucleoli and mitoses were found in the tumor cells. Immunostaining found the tumor cells positive for CK7

and TTF-1, but negative for CK20 (Fig. 3). The patient was diagnosed with advanced adenocarcinoma of the lung with zosteriform metastasis. He died three months after the diagnosis of cutaneous metastasis.



Fig. 1. Clinical zoster-like lesions along the T4 dermatome on the left chest wall.

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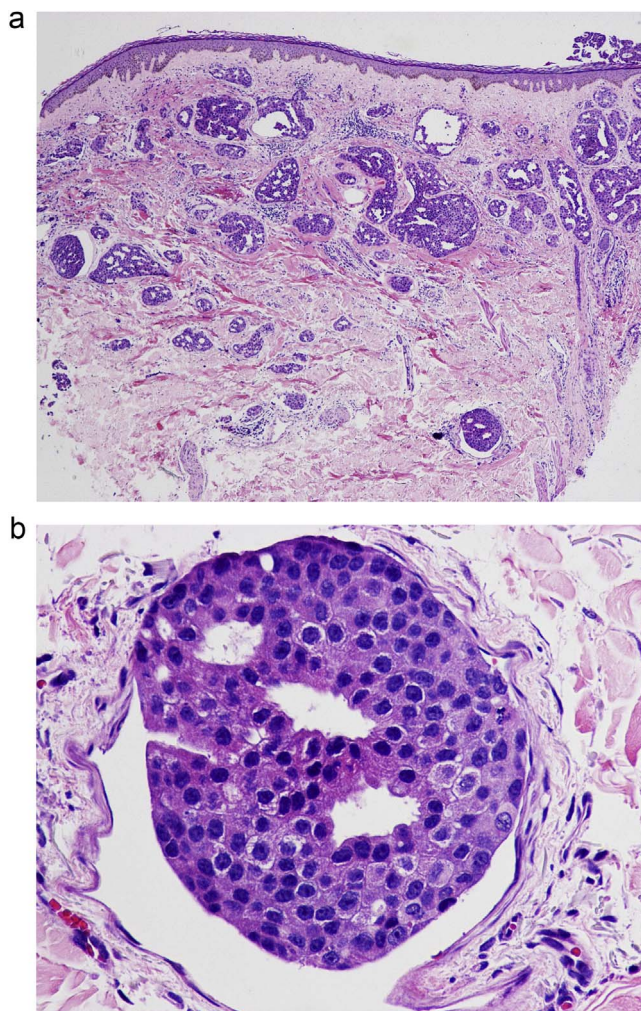


Fig. 2. a, Sheet of tumor cells with glandular formations in the dermis (H & E, original magnification x20). b, The tumor cells showing hyperchromatism and prominent nucleolus located within a dilated lymphatic vessel (H & E, original magnification x200).

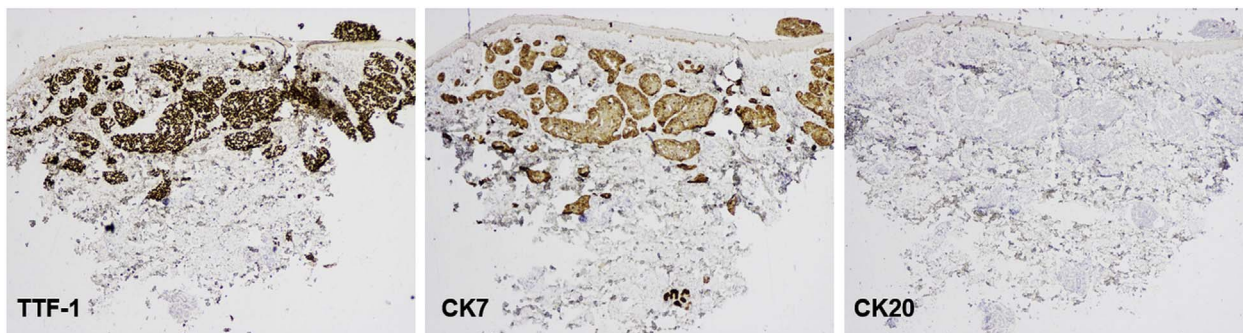


Fig. 3. Immunohistochemistry studies showed the tumor cells were positive for TTF-1 and CK7 but negative for CK20.

### 3. Discussion

The zosteriform pattern is extremely rarely reported in patients who have developed cutaneous metastasis with clinical zoster-like infection. Our literature review found that this rare condition had been reported in a few kinds of primary malignancy, for example, lung cancer, melanoma, prostate cancer, lymphoma, and breast cancer [3–10].

The lesions in all reported cases of zosteriform metastases from lung cancer were located on the chest wall [3,4]. It indicates that tumor pathogenesis may be related to the primary origin. Four mechanisms for

this have been suggested by various authors: (a) the tumor cells spread along lymphatic or vascular vessels; (b) through an invasion into the thoracic perineural sheath; (c) a Koebner-like reaction on the site of an existing herpes zoster infection; (d) a localized spread of tumor cells from a surgical site, for example, following thoracic surgery, pleural biopsy, or intercostal drainage [4,5,7].

Dermatopathology and immunohistochemistry studies are the tools of definite diagnosis for metastatic adenocarcinoma of the lung. Metastatic adenocarcinoma shows the tumor cells arranged in glandular formations or signet-ring cells with pleomorphism,

hyperchromatism and increased numbers of mitoses. The tumor cells often stain positive for mucin. The evaluation of primary and secondary lung adenocarcinoma could use TTF-1, CK7, and CK20 immunohistochemistry studies. Primary adenocarcinomas of the lung usually show positive for TTF-1 and CK7, but negative for CK20.

TTF-1 is a DNA-binding protein that is found in follicular cells of the thyroid gland and pneumocytes. It is a handy tool for distinguishing primary lung adenocarcinoma from other primary malignancies [11]. A meta-analysis study found that patients with non-small cell lung cancer who were positive for TTF-1 overexpression had a favorable prognosis [12]. However, cutaneous metastatic lung cancer had a poor prognosis with a median survival time of 3.9 months [1].

In conclusion, the authors reported the rare case of zosteriform metastatic adenocarcinoma of the lung which confirmed by histopathologic and immunostaining studies. A high index of suspicion needs to consider in patients who had a similar clinical pattern for giving an early diagnosis.

#### Conflict-of-interest statement

All authors declare any conflict interest.

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#### References

- [1] Z. Song, B. Lin, L. Shao, Y. Zhang, Cutaneous metastasis as a initial presentation in advanced non-small cell lung cancer and its poor survival prognosis, *J. Cancer Res. Clin. Oncol.* 138 (2012) 1613–1617.
- [2] J. Marcoval, R.M. Penin, R. Llatjos, I. Martinez-Ballarín, Cutaneous metastasis from lung cancer: retrospective analysis of 30 patients, *Australas. J. Dermatol.* 53 (2012) 288–290.
- [3] P. Subramanyam, S.S. Palaniswamy, A. Tewari, Zosteriform cutaneous metastases from an occult primary malignancy of lung identified by whole-body FDG PETCT imaging, *Indian J. Nucl. Med.* 31 (2016) 286–288.
- [4] W.H. Li, C.Y. Tu, T.C. Hsieh, P.Y. Wu, Zosteriform skin metastasis of lung cancer, *Chest* 142 (2012) 1652–1654.
- [5] I. Zalaudek, B. Leinweber, E. Richtig, J. Smolle, R. Hofmann-Wellenhof, Cutaneous zosteriform melanoma metastases arising after herpes zoster infection: a case report and review of the literature, *Melanoma Res.* 13 (2003) 635–639.
- [6] P. Savoia, P. Fava, T. Deboli, P. Quaglino, M.G. Bernengo, Zosteriform cutaneous metastases: a literature meta-analysis and a clinical report of three melanoma cases, *Derm. Surg.* 35 (2009) 1355–1363.
- [7] Y. Kikuchi, A. Matsuyama, K. Nomura, Zosteriform metastatic skin cancer: report of three cases and review of the literature, *Dermatology* 202 (2001) 336–338.
- [8] S. Niiyama, K. Satoh, S. Kaneko, S. Aiba, M. Takahashi, H. Mukai, Zosteriform skin involvement of nodal T-cell lymphoma: a review of the published work of cutaneous malignancies mimicking herpes zoster, *J. Dermatol.* 34 (2007) 68–73.
- [9] R. Rao, C. Balachandran, L. Rao, Zosteriform cutaneous metastases: a case report and brief review of literature, *Indian J. Dermatol. Venereol. Leprol.* 76 (2010) 447.
- [10] Z. Apalla, V. Chassioti, D. Ioannides, E. Sotiriou, D. Papadopoulou, A. Dallas, Zosteriform cutaneous metastasis of breast carcinoma in a male patient, *Int. J. Dermatol.* 53 (2014) e358–359.
- [11] S.K. Lau, D.J. Luthringer, R.N. Eisen, Thyroid transcription factor-1: a review, *Appl. Immunohistochem. Mol. Morphol.* 10 (2002) 97–102.
- [12] H.H. Qian, T.S. Xu, X.Q. Cai, T.L. Ji, H.X. Guo, Prognostic value of TTF-1 expression in patients with non-small cell lung cancer: a meta-analysis, *Clin. Chim. Acta* 451 (2015) 208–214.