

Case Report

The Cytology of Subcutaneous Chest Wall Metastasis Originating from Bronchiolo- Alveolar Carcinoma

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ABSTRACT

Bronchiolo-alveolar carcinoma with subcutaneous chest wall metastasis is a very rare presentation. A case of 36- year-old male with metastatic subcutaneous chest nodule of bronchiolo-alveolar carcinoma, diagnosed by fine needle aspiration cytology, is reported here. Cutaneous metastases are of diagnostic importance because they may be the first manifestation of an undiscovered internal malignancy and indicates a poor prognostic sign. Fine needle aspiration cytology plays an important role in the early diagnosis of subcutaneous metastasis and helps to differentiate from other subcutaneous nodules like skin adnexal lesions, soft tissue tumors and inflammatory lesions.

Keywords: Bronchioloalveolar Carcinoma, Chest Wall, Subcutaneous Tissues, Metastasis

Introduction

Bronchiolo-alveolar carcinoma (BAC) first described in 1876 by Malassez, is a distinct pulmonary adenocarcinoma. Subcutaneous metastasis as the first indication of BAC is a very rare occurrence and has not been documented. Fine needle aspiration cytology (FNAC) plays an important role in the early diagnosis and management of such lesions and helps to differentiate from other subcutaneous nodules like skin adnexal lesions, soft tissue tumors and inflammatory

lesions. The cytology of subcutaneous metastasis of a case of BAC in a 36- year- old male is reported here.

Case report

A 36- year -old male smoker had a slowly growing chest nodule of two months duration. Subsequently he developed severe breathlessness, cough, and was admitted. Local examination of the chest nodule revealed a 2x1 cm discrete round painless firm swelling in the subcutaneous plane in

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the right second intercostal area, lateral to the sternum.

The general physical examination showed right cervical and axillary lymphadenopathy. The systemic examination revealed right sided pleural effusion. The other systemic examinations were within normal limits. Chest X ray confirmed the pleural effusion with diffuse areas of consolidation. CT scan of the lung revealed consolidated areas showing low attenuation in the right lobe and accentuated pulmonary vessels. Ultrasound of the abdomen revealed no abnormality. The other routine investigations were normal.

FNAC of the subcutaneous chest nodule and cervical nodes was performed using a 10ml syringe and a 24-gauge needle to obtain a cellular aspirate. The smears were stained with hematoxylin-eosin (H&E), May Grunwald Giemsa stain (MGG). The smears from the chest nodule and cervical

node showed similar cytology. The smears were highly cellular consisting of many large cohesive monolayered sheets, finger-like papillae and dispersed epithelial cells (Fig. 1; a, b). The cells were predominantly uniform in size the cytoplasm was delicate and lacy. The nuclei had finely granular chromatin and small or absent nucleoli. Few clusters showed variable polymorphism and nuclear atypia (Fig. 1; c, d). Occasional cells showed intranuclear cytoplasmic inclusions. A cytological diagnosis of metastatic subcutaneous nodule with possibility of bronchiolo-alveolar carcinoma was suggested. The histopathological examination of the lung lesion showed pleomorphic cuboidal epithelial cells growing along the alveolar septae, the features consistent with BAC. Histochemical staining showed Periodic-acid-schiff (PAS) positive intranuclear inclusions and the diagnosis of BAC was confirmed.

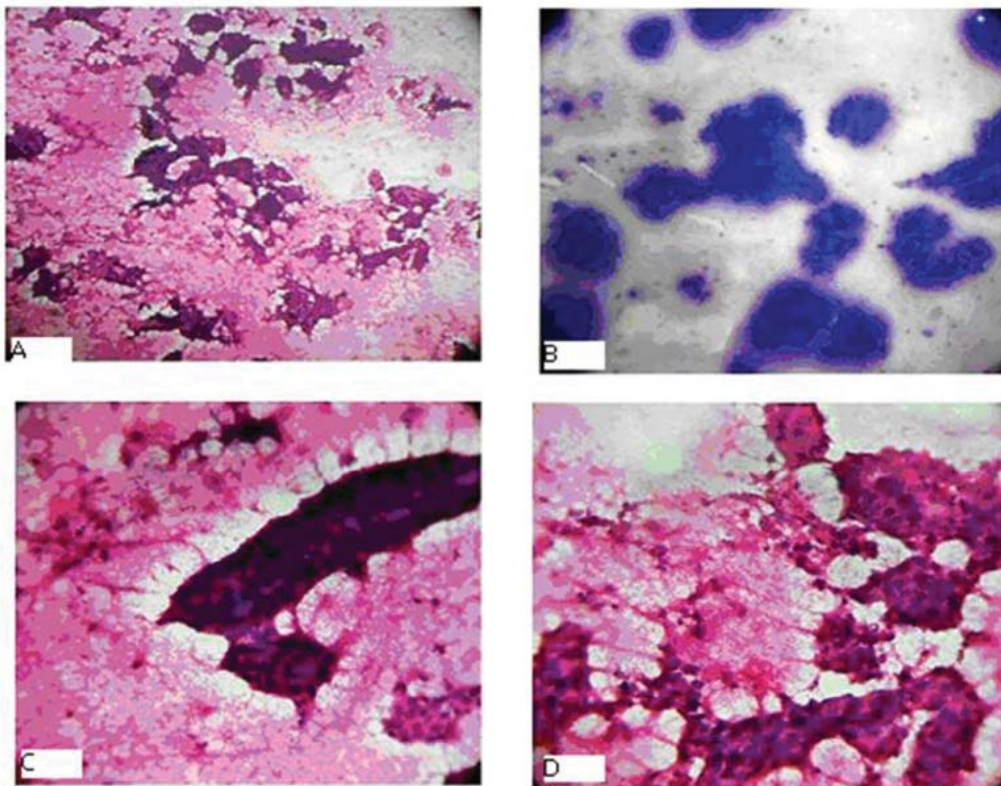


Fig. 1- A and B: Smear showing monolayered sheets and finger-like papillae of epithelial cells (H and E (left), MGG (right) , $\times 100$)

C and D : Smear showing finger like pappillae and pleomorphic epithelial cells with nuclear features (H and E, $\times 400$)

Discussion

BAC represents 1-8% of lung cancers (1). There is a disproportionate occurrence in young patients particularly women and non-smokers (2). In 1960, Liebow (3) defined BAC as a pulmonary adenocarcinoma with cuboidal or columnar epithelial cells growing on the pre-existing alveolar septae without destroying the pulmonary architecture. BAC has a dual clinical profile presenting as a well-circumscribed peripheral discrete asymptomatic nodule with a tendency to spread within the confines of the lung and a less common diffuse infiltrative form presenting with cough and dyspnea. In 1999 WHO defined BAC as a non-invasive tumor but BAC with invasion has been documented with diffuse infiltrative form. BAC involving the pleura, mediastinal and hilar nodes are reported. Distant metastasis to pituitary gland, thyroid, cervical lymph nodes, and ovary have been documented (4-7).

Schwartz (8) reported cutaneous metastatic disease as the first sign of internal cancer commonly seen with carcinomas of lung, kidney, and ovary. It occurs because of hematogenous dissemination.

The frequency of skin metastasis due to lung cancer is 24% in men and 4% in women (9,10). The metastasis of lung carcinoma is more common in men but the incidence in women is increasing. Cutaneous metastasis may be the first manifestation of an underlying lung tumor or both primary and metastasis are diagnosed at the same time. The most common sites of cutaneous metastases are chest wall and posterior abdomen (8).

Cytological features of metastatic subcutaneous BAC has been described by Silvermen *et al.* (11) and the findings are similar to the one described in the case report. These cytological features resemble those seen in the primary BAC in about 30% of the

cases (9).

The cytological differential diagnoses of cutaneous metastatic BAC include metastatic cutaneous carcinomas of the breast, gastrointestinal tract, kidney, and ovary (12). Cutaneous metastatic carcinomas of the breast are found in females. Inflammatory carcinomas and schirrous carcinomas metastasize to skin through lymphatics. The cytology of inflammatory carcinomas shows pleomorphic ductal epithelial cells in a inflammatory background. The schirrous carcinomas show fragments of collagen amidst pleomorphic cells. The cutaneous metastasis is positive with keratin, epithelial membrane antigen (EMA) and carcino embryonic antigen (CEA).

Cutaneous metastatic gastrointestinal carcinoma shows small groups of tumor cells in pools of mucin. Signet ring cells may be present.

Cutaneous metastatic renal cell carcinomas are most common in the head and neck region. The tumor cells show oval nuclei with abundant clear cytoplasm and often are in a glandular configuration. The tumor cells are positive with cytokeratin and EMA and negative with CEA. Cutaneous Metastatic papillary tumors are common in females. The cytology shows papillary fragments and psammoma bodies.

Subcutaneous metastatic BAC occurring as the first presentation is rather very rare. It represents wide spread metastasis to multiple sites and is a poor prognostic sign. FNAC is an excellent tool for early diagnosis and helps in the management of an underlying internal malignancy.

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References

1. Rosenblatt MB, Lisa JR, Collier F. Primary and metastatic bronchiolo-alveolar carcinoma. *Dis Chest* 1967;52(2):147-52.
2. Auerbach O, Garfinkel L. The changing pattern of lung carcinoma. *Cancer* 1991;68(9):1973-7.
3. LIEBOW AA. Bronchiolo-alveolar carcinoma. *Adv Intern Med* 1960;10:329-58.
4. Lau G, Tan SY, Chiang G, Poh WT. Bronchioloalveolar carcinoma with metastasis to the pituitary gland: a case report. *J Clin Pathol* 1998;51(12):931-4.
5. Singh R, Lehl SS, Sachdev A, Handa U, D'Cruz S, Bhalla A. Metastasis to thyroid from lung carcinoma. *Indian J Chest Dis Allied Sci* 2003;45(3):203-4.
6. Mallens WM, Nijhuis-Heddes JM, Bakker W. Calcified lymph node metastases in bronchioloalveolar carcinoma. *Radiology* 1986;161(1):103-4.
7. Yeh KY, Chang JW, Hsueh S, Chang TC, Lin MC. Ovarian metastasis originating from bronchioloalveolar carcinoma: a rare presentation of lung cancer. *Jpn J Clin Oncol* 2003;33(8):404-7.
8. Schwartz RA. Cutaneous metastatic disease. *J Am Acad Dermatol* 1995;33(2 Pt 1):161-82.
9. Brownstein MH, Helwig EB. Metastatic tumors of the skin. *Cancer* 1972;29(5):1298-307.
10. Reingold IM. Cutaneous metastases from internal carcinoma. *Cancer* 1966;19(2):162-8.
11. Silverman JF, Finley JL, Park HK, Strausbauch P, Unverferth M, Carney M. Fine needle aspiration cytology of bronchioloalveolar-cell carcinoma of the lung. *Acta Cytol* 1985;29(5):887-94.
12. Johnson W. *Lever's Histopathology of Skin*. 8th ed. Philadelphia: Lippincot-Raven; 1997.