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SHORT REPORT

Recurrence of pulmonary intravascular bronchoalveolar tumor with mediastinal metastasis 20 years later

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Summary Pulmonary intravascular bronchoalveolar tumor (IVBAT) also recognized as pulmonary epithelioid hemangioendothelioma, is a rare malignant vascular tumor of unknown etiology. IVBAT is a tumor of multicentric origin and the lungs are rarely involved, with only about 60 cases of pulmonary IVBAT described in the literature. The prognosis is unpredictable, with life expectancy ranging from 1 to 15 years. We report an unusual case of pulmonary IVBAT that recurred in the lung with metastasis to the mediastinum.

Case presentation

In 1984, a 58-year-old woman first presented with bilateral lung nodules for which a left lower lobe resection was performed (Fig. 1a). Biopsy of the lung nodule revealed epithelioid cells with large clear intracytoplasmic vacuoles consistent with pulmonary IVBAT (Fig. 1b). She was not offered therapy. Serial chest radiographs demonstrated regression of the lung nodules (Fig. 1c).

In 2004, she presented with right lateral costal margin tenderness of 4 weeks duration that she first noticed while working in her yard. She denied other symptoms and never smoked. On examination, she was in minimal distress due to pain. Her vital signs were normal. She had no lymphadenopathy. She had digital clubbing and tenderness along the right costal margin. The lung exam revealed dullness to

Abbreviations: CT, computerized tomography; IVBAT, pulmonary intravascular bronchoalveolar tumor

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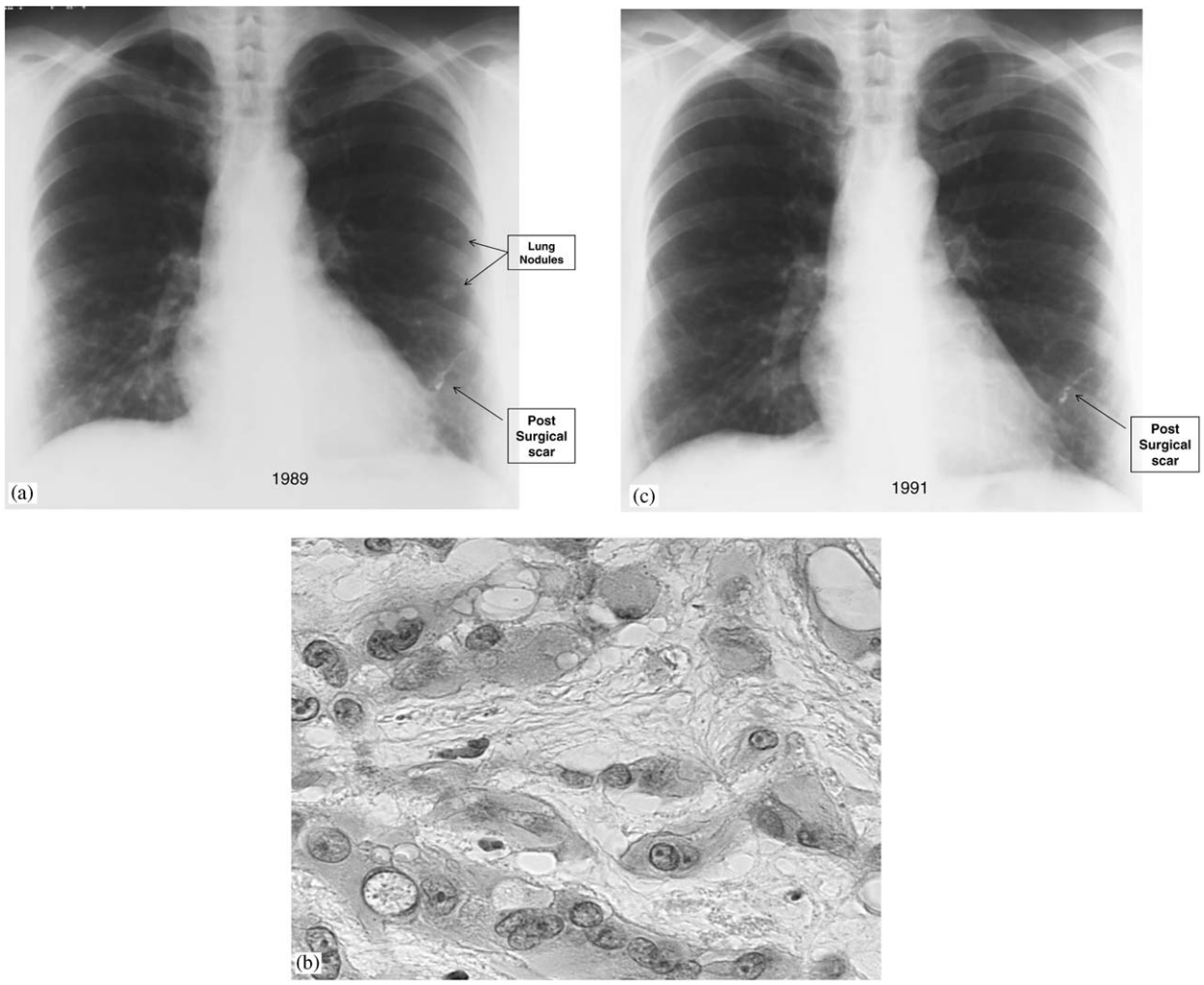

Figure 1 Pulmonary intravascular bronchoalveolar tumor at initial presentation. (a) Chest radiograph shows bilateral lung infiltrated and a postoperative scar. (b) Pulmonary IVBAT lung biopsy from 1984 revealed epithelioid cells with large clear intracytoplasmic vacuoles consistent with pulmonary IVBAT. (c) Chest radiograph shows complete resolution of lung nodules.

percussion in the right infrascapular and lower axillary region with inspiratory crackles. A radiograph and a computerized tomography (CT) of the chest revealed a well-circumscribed homogenous mass in the right upper-lobe, posterior segment with mediastinal lymphadenopathy (Fig. 2a). A positron emission tomography (PET) scan revealed intense uptake of fluorine-18-deoxyglucose in the mass and in the mediastinal lymph nodes. A hypermetabolic area was also seen in her right chest wall consistent with the location of her chest pain. There was no uptake in her liver. A flexible fiberoptic bronchoscopy with bronchoalveolar lavage and biopsy were non-diagnostic. Mediastinoscopy with a right mediastinal lymph node biopsy revealed pulmonary epithelioid hemangioendothelioma. Histopathological evaluation of the mass showed a collection of epithelioid cells with large clear intracytoplasmic vacuoles (Fig. 2b). Immunohistochemically, the tumor cells were cytokeratin negative (Fig. 2c) while positive for vascular marker CD31 (Fig. 2d) confirming their endothelial lineage. Further, a comparison of the mediastinal biopsy with her previous lung biopsy demonstrated striking similarities, both showing epithelioid cells with large clear intracytoplasmic vacuoles which confirmed the histologic diagnosis of pulmonary IVBAT.

Discussion

Pulmonary IVBAT was first described by Dail et al. in 1975.[1] The tumor was thought to be an aggressive form of bronchoalveolar carcinoma with

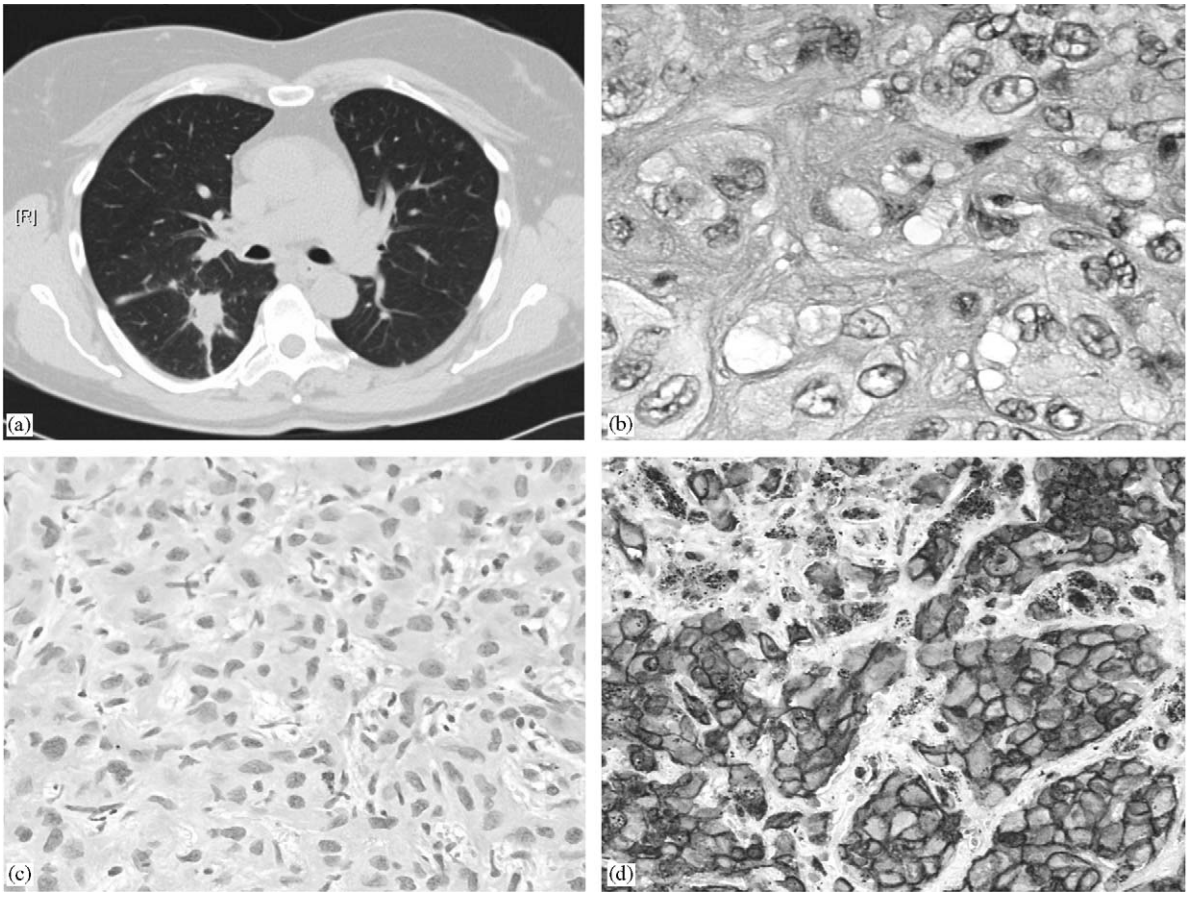

Figure 2 Pulmonary intravascular bronchoalveolar tumor at current presentation. (a) Chest CT demonstrates the right upper lobe posterior segment mass. (b) Mediastinal lymph node biopsy showing the epithelioid type cells with large clear intracytoplasmic vacuoles. (c) The lymph node biopsy showing epithelioid cells negative for cytokeratin stains. (d) The lymph node biopsy showing epithelioid cells with positive CD31 staining.

a propensity to invade adjacent vasculature. Immunohistochemistry and electron microscopic studies demonstrated that IVBAT is of endothelial origin and the tumor was renamed epithelioid hemangioendothelioma.[2–4] IVBAT is a rare vascular tumor of low-grade malignancy, although cases of more aggressive behavior have been reported.[5,6] IVBAT is a tumor of multicentric origin that can arise from liver, bone, soft tissues and skin simultaneously or sequentially.[5,7–9] However, the lungs are rarely involved. The incidence of pulmonary tumor is slightly higher in women with a male to female ratio of 1:1.6–4.[5] The mean age at diagnosis is 35 and life expectancy ranges between 1 and 20 years.[5] IVBAT is often diagnosed incidentally, as patients are usually asymptomatic or have minor symptoms at the time of diagnosis.[5,7] Histologic features of IVBAT include clusters of spindled epithelioid cells with large, irregular nuclei and nucleoli with a moderate amount of vacuolated cytoplasm.[5,10] Special immunohistochemical stains positive for endothelial cell markers such as CD31, CD34, factor VIII-related antigen, and CD1A, and negative for cytokeratin, support the diagnosis of IVBAT.[5,10] Because of the rarity of these tumors, little is known about the treatment and prognosis. There is no single effective treatment. Reports show that some patients respond to chemotherapy with cyclophosphamide plus cisplatin or carboplatin plus etoposide while others demonstrate a partial to near complete response to interferon therapy.[5,7–9] The prognosis is very unpredictable. Spontaneous regression of the tumor has been observed for up to 15 years after initial diagnosis.[1,5] Extensive spread to the intravascular, endobronchial or pleural regions as well as the presence of liver nodules and peripheral lymphadenopathy may predict a worse prognosis.[5,7–9] The life expectancy varies from 1 to 15 years.[1,5]

In this case, recurrence of pulmonary IVBAT occurred after 20 asymptomatic years. Our patient

had minor symptoms with an incidental diagnosis of lung nodules at both presentations. The current presentation appears to be more aggressive because of involvement of the lung, mediastinal nodes and chest wall. She was advised palliative radiation therapy to her chest wall followed by combination chemotherapy with carboplatin and etoposide. Although, pulmonary epithelioid hemangioendothelioma is sometimes thought to be derived from malignant epithelioid hemangioendothelioma of the liver; in our case, lack of hypermetabolic uptake in her liver on PET scan suggests that it is less likely to be derived from the liver.

Conclusion

In this case of pulmonary IVBAT, we observed recurrence of the disease with an aggressive presentation involving the mediastinum following a prolonged period of remission.

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