Case Report

Bronchial Schwannoma Masquerading as Cause of Hemoptysis in a Patient with Pulmonary Embolism


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A 78-year-old woman who had a history of left deep venous thrombosis was referred to our hospital with a sudden hemoptysis. Thoracic computed tomography showed a solitary pulmonary nodule in the right lower lobe. Based on her medical history of deep venous thrombosis, she was tentatively diagnosed as having pulmonary embolism and successfully treated by inserting an inferior vena cava filter and anticoagulant therapy with warfarin [Please confirm whether previous sentence is correct]. However, the lung nodule on thoracic computed tomography was still depicted four months later. With suspicion of a malignant tumor, including possible lung cancer, a right segmentectomy was performed. Pathological assessment of the resected specimen showed the tumor was derived from the right bronchial wall, but was not ruptured into the intratracheal lumen, as well as coexistence with intraalveolar hemorrhage near the tumor. The lung nodule was diagnosed as bronchial schwannoma. Thus, the origin of the hemoptysis was found to be pulmonary embolism due to deep vein thrombosis, and not by bronchial schwannoma, which was also present in the lung.

Key words: bronchial schwannoma, solitary pulmonary nodule, pulmonary embolism, hemoptysis, deep venous thrombosis

Radiological and Pathological Findings in a Patient with Bronchial Schwannoma Presented with Hemoptysis

Abbreviations; PE: pulmonary embolism, DVT: deep venous thrombosis, CT: computed tomography

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INTRODUCTION

The incidence of primary neurogenic tumors of the lung has been estimated to be 0.2% of all pulmonary neoplasms. Primary pulmonary schwannoma is a benign, asymptomatic tumor, and is usually located within the pulmonary parenchyma. The bronchial schwannoma, first reported in 1951, is also an extremely rare, benign bronchial tumor that is usually accompanied by such clinical symptoms as a productive cough, pyrexia, and shortness of breath. Herein, we present a case of bronchial schwannoma with a hemoptysis that was due to a concurrent pulmonary embolism (PE). Until today, only five cases have been reported with a chief complaint of hemoptysis, and this is a first report of bronchial schwannoma masquerading as the cause of hemoptysis in a patient with PE. We recognized the tumor as a solitary pulmonary nodule, and, after retrieving a resected specimen, compared the findings from a pathological finding with those from computed tomography (CT).

CASE

A 78-year-old woman was referred to our emergency department due to a sudden onset of hemoptysis. The patient had a medical history of left deep venous thrombosis (DVT), which was confirmed by ultrasound Doppler technique at her local hospital, and had been taking warfarin for the past year. Her vital signs showed blood pressure of 140/98 mmHg, a pulse rate of 102/min, body temperature of 36.3°C, a respiratory rate of 24 breaths/min, and an oxygen saturation level of 88%. The physical examination was normal except for coarse crackles in her bilateral lower lung fields, as well as gradual edema in both legs. A chest roentgenogram revealed ground-glass opacity in the right middle lung, and a non-enhanced thoracic CT showed a tiny, smooth, solitary nodule measuring 25 mm at the peripheral area between right B10b and B10c (Fig. 1-A). On day 2, the patient had moderate hemoptysis. Although a bronchoscopy was performed four days after admission, the tracheal lumen was entirely occluded by a clot in the right proximal portion, and the cause of the hemoptysis was unknown. Hemoptysis occurred again on day 13, and 3 days later a chest roentgenogram and a lung perfusion scintigraphy scan showed solid, new consolidation in her right middle lung and a wedge shaped defect in the same area, as well as the disappearance of left DVT on contrast enhanced CT, which was previously seen on ultrasound Doppler technique at her local hospital (Figure not shown). In addition to the imaging findings, the patient’s Wells and Geneva score (10 points and 11 points, respectively) showed a high probability of PE. Thus we concluded that DVT, subsequently followed by a pulmonary embolism (PE), was the source of her hemoptysis. An inferior vena cava filter was inserted and the hemoptysis gradually disappeared. The patient was discharged uneventfully.

Four months later, the patient had another bronchoscopy, which revealed a protruding submucosal tumor with a smooth surface. The tumor measured 25 mm at the right B10b orifice (Fig. 1-B), which was consistent with the patient’s CT findings on admission (Fig. 1-A). Afterward, a right segmentectomy was performed, and a specimen was taken from the right S10. The tumor, originating from the right B10b bronchial wall, measured 25 mm, revealed cystic change (Fig. 1-C, arrowhead), and protruded to the bronchial lumen (Fig. 1-C), compressing the right B10c. Upon hematoxylin and eosin staining, the resected tumor was found to be composed of spindle-shaped cells showing both Antoni A and B type histologies (Fig. 1, D-1, D-2), which were positive for immunohistochemical upon S-100 protein staining (Fig. 1, D-3), implying bronchial schwannoma. Although the tumor was accompanied by an intraalveolar hemorrhage that was localized in the peribronchiolar area (Fig. 1, D-4), the bronchial schwannoma showed no bleeding or necrotic components, and there was no rupture into the intratracheal lumen (Fig. 1-E). Taken together, the patient was thus diagnosed with bronchial schwannoma concurrent with PE caused by DVT.

DISCUSSION

Schwannomas frequently arise from the intercostal nerves and sympathetic trunk in the thorax, while primary intrapulmonary or bronchial schwannomas are uncommon. They are an extremely uncommon
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Figure 1-A: Non-enhanced thoracic CT depicted a tiny, solitary, smooth nodule 25 mm in size at the peripheral area between right B10b and B10c.

Figure 1-B: Repeated bronchoscopy 4 months after commencing treatment revealed a protruding submucosal 25 mm tumor with a smooth surface at the right B10b orifice (Fig. 1-B).

Figure 1-C (macroscopic view of resected tumor): Resected specimen from thoracotomy revealed that the tumor was derived from the right bronchial wall (right B10b) and had a cystic component (Fig. 1-C, arrowhead) that protruded into the lumen, and compressed the right B10c.

Figure 1-D (microscopic view of resected tumor): After hematoxylin and eosin (HE) staining, we concluded that the tumor was composed of typical spindle-cell proliferation with Antoni A (Fig. 1, D-1, ×200) and Antoni B pattern (Fig. 1, D-2, ×200). These cells were positive for immunohistochemical staining of S-100 protein (Fig. 1, D-3, ×200) and could easily delineate the focal area of the intraalveolar hemorrhage on HE stain (Fig. 1, D-4, ×40).

Figure 1-E: On HE stain (×40), the tumor, which had not ruptured into the intratracheal lumen, was easily visible between its border, the bronchiole, and tumor (asterisk).
cause of intratracheal tumor, and rarely cause respiratory symptoms, particularly if the lesion is located in the lung parenchyma and/or distal bronchi. However, if the lesion is in the proximal portion, such as the trachea or bronchus, it might produce obvious symptoms, such as a productive cough, pyrexia, and dyspnea upon effort. To the best of our knowledge, the present case was one of only 58 cases of bronchial schwannoma that have been reported in Japan, and the hemoptysis that occurred in this disease seemed to be a rare clinical presentation as an initial onset. Therefore, we should pay attention to diverse differential diagnosis for hemoptysis.

Although the tumor in our case was located in the distal bronchiole, there was a sudden onset of hemoptysis. High values of Wells and Geneva scores led us to a diagnosis of PE together with the presence of DVT. In addition, the pathological findings revealed that an intraalveolar hemorrhage easily delineated a tumor with loose connective tissues (Fig.1, D-4); however, there was no fistula between the tumor and bronchiole (Fig.1-E). Thus, in our present case, the moderate hemoptysis was due to a PE, not bronchial schwannoma, which was also present in the lung.

Upon treatment, the PE symptoms subsided over three months. The present case showed a unique clinical presentation in that thoracic CT incidentally depicted a small solitary nodule measuring 25 mm in right S10 together with the ground-glass opacity in the right middle lobe in a patient with hemoptysis who had been treated as DVT. Based on the pathological findings of resected specimens obtained from right segmentectomy, the nodule in right S10 was diagnosed as bronchial schwannoma, which was known as an extremely rare cause of all pulmonary neoplasms. On the other hand, the ground-glass opacity in right middle lobe was considered to be the cause of PE.

This case was diagnosed with bronchial schwannoma incidentally-detected by PE of which the radiological (Fig.1-A) and pathological findings (Fig.1-C, 1-D, 1-E) were successfully compared, and was a first report of bronchial schwannoma coinciding with PE presented as hemoptysis.

CONCLUSION
The hemoptysis of our case was not caused by bronchial schwannoma itself, but PE. The present case reminds us that bronchial schwannoma is rarely the cause of hemoptysis, which needs to be given consideration for diverse differential diagnosis.

Disclosures: None
We have nothing to report regarding "Disclosure of financial interest" and declare that we are not thinking of redundant or duplicate publication.

References
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