Solitary Extramedullary Plasmacytoma Presenting as an Endobronchial Mass

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Abstract

Solitary extramedullary plasmacytoma (SEP) is a plasma cell neoplasm that develops outside of the bone marrow. A solitary, exophytic growth in the airway is an extremely rare presentation of SEP. We herein report a case of SEP presenting as an endobronchial mass. The tumor was treated by rigid bronchoscopic debulking followed by ablation using argon plasma coagulation. However, the tumor could not be completely removed due to its wide base. Adjuvant radiotherapy was administered as the curative therapy. A biopsy was performed on the resected specimen and the diagnosis of plasmacytoma was thereby confirmed.

Key words: plasmacytoma, bronchi, bronchoscopic surgery

(Intern Med 52: 2113-2116, 2013)
(DOI: 10.2169/internalmedicine.52.0572)

Introduction

Solitary extramedullary plasmacytoma (SEPs) is a rare form of plasma cell neoplasm that develops outside of the bone marrow (1). SEP presenting as an endobronchial mass is even rarer. We herein present a case of SEP presenting as an endobronchial nodule without the involvement of any other sites. The tumor was removed using rigid bronchoscopy with argon plasma coagulation (APC).

Case Report

A 47-year-old woman had a 1-month history of blood-tinged sputum. Twenty years prior, she had been treated for pulmonary tuberculosis. She was a non-smoker. Upon admission, there were no abnormal findings from either the physical examination or the laboratory testing results.

A chest computed tomography (CT) scan revealed an enhancing mass of approximately 1.9×1.7 cm in size in the carina. The mass lacked obstructive atelectasis and there was no invasion of the lung parenchyma (Fig. 1A). Fluorodeoxyglucose positron emission tomography (PET) imaging showed a positive tumor uptake (maximum standardized uptake value =12.0) (Fig. 1B). No other areas of positive tumor uptake were noted; therefore, there was no metastasis indicated.

Fiber-optic bronchoscopy revealed a smooth-surfaced, protruding mass about 2.0-cm in diameter located in the anterior wall of the trachea just above the carina. The mass obstructed about 80% of the right main bronchus (Fig. 1C, D). The fiber optic bronchoscopic biopsy sample was not sufficient to make a definitive diagnosis due to the small size of the recovered tissue samples, but it did not show any evidence of malignancy. Therefore, we performed rigid bronchoscopy to confirm the histological diagnosis as well as to remove the tumor. The policy at our institute required bronchoscopic intervention for patients with benign tracheobronchial tumors if the tumor appeared to be accessible on chest CT and could be removed bronchoscopically. Bronchoscopy was performed under general anesthesia using intravenous propofol. After the induction of general anesthesia, the patient was intubated with a rigid bronchoscope tube (Karl-Storz, Tuttlingen, Germany). An EVIS BF 1T260 flexible bronchoscope (Olympus, Tokyo, Japan) was then introduced through the bronchoscope tube and the tumor was evaluated. APC was applied at the base of tumor for pre-coagulation and the mass was removed piecemeal using...
rigid bronchoscopic biopsy forceps. After the removal of the tumor, additional APC was applied at the base of the tumor for the removal of residual lesions and to control bleeding. Despite these actions, the tumor could not be completely removed due to its wide base.

A microscopic examination revealed a diffuse arrangement of tumor cells that showed various stages of plasma cell features with immunoreactivity for the lambda light chain (Fig. 2). Electrophoresis of the patient’s serum and urine did not show any abnormal findings. The content of plasma cells was <3% in the bone marrow and biopsy aspirations, and there were no abnormal findings including any evidence of plasma cell neoplasm.

The patient was discharged on the first day following her procedure. She was subsequently treated with 4000 cGy of radiation therapy.

Discussion

SEP involves the lung are uncommon plasma cell neoplasms that present outside of the bone marrow. SEPs constitute about 3% percent of plasma cell malignancies (2, 3). Approximately 90% of SEPs involve the upper respiratory tract, and present as epistaxis, rhinorrhea or a nasal obstruction (1). The recommended diagnostic criteria for SEP are as follows: a single extramedullary mass of clonal plasma cells, a histologically normal marrow aspirate and trephine, normal results upon skeletal survey, the absence of anemia, the presence of hypercalcemia or renal impairment due to plasma cell dyscrasia and the absence or the depression of the serum or urinary level of monoclonal immunoglobulin. In our case, the patient met all the criteria for SEP. SEPs can present as a solitary nodule, a lobar consolidation or as diffuse pulmonary infiltrates (4-6). However, an SEP presenting as an endobronchial mass is extremely uncommon. To the best of our knowledge, only four cases have been reported in the English literature and confirmed through immunostaining (6-9). All of the previous cases were men with a median age of 56 years (interquartile range, 46-66). Three of the four patients had respiratory symptoms that included cough and dyspnea. The tumors were located in the left main bronchus (n=2), the left lower lobar bronchus (n=1)
and the carina (n=1). The immunohistochemical staining indicated that two of the patients had kappa chain-type tumors, and the other two patients exhibited lambda chain-type tumors. In contrast to these previous cases, our case was a woman who was younger than the previous cases and who presented with hemoptysis. Previous reports have indicated that a PET CT scan could detect otherwise-missed lesions except the primary lesions in plasmacytoma (10). However, we were able to use a PET CT scan to not only diagnose the endobronchial plasmacytoma but also to demonstrate the lack of involvement of any other sites.

In the treatment of SEPs, radical surgery should be considered when the tumors occur in locations other than in the head and neck (1). Although surgical resection should be performed conservatively for these benign endobronchial tumors, a thoracotomy is usually required. However, when the SEP is a carinal tumor like our patient exhibited, carinal resectional surgery is a poor option as the procedure has high mortality and morbidity rates of up to 13% and 39%, respectively, in a large case series (11). Recently, bronchoscopic intervention has been shown to be a safe and effective tool for the treatment of tracheobronchial tumors (12, 13). However, bronchoscopic intervention for a curative intent should be carefully applied to wide-based tumors due to the difficulty in completely removing them. An incomplete removal could lead to a recurrent tumor. In the previous reports concerning endobronchial SEPs, two cases were treated by bronchoscopic removal using Nd-YAG laser ablation and the other two cases underwent surgical resection (6-9). In the two cases that underwent bronchoscopic removal, the tumors had relatively narrow bases as compared with our case (6, 8). The tumor described herein had a wide base and could therefore not be completely removed using rigid bronchoscopic intervention. We performed adjuvant radiotherapy for a curative treatment because SEPs are highly radiosensitive tumors.

In conclusion, SEP presenting as a solitary endobronchial mass is a rare disease. Rigid bronchoscopic intervention should therefore be carefully considered as a curative treatment for tumors with wide bases.

The authors state that they have no Conflict of Interest (COI).

Acknowledgement
This study was financially supported by Chonnam National University in 2010.
References