http://dx.doi.org/10.4046/trd.2012.73.3.174
ISSN: 1738-3536(Print)/2005-6184(Online)
Tuberc Respir Dis 2012;73:174-177

Case Report

Endobronchial Schwannoma Treated by Rigid Bronchoscopy with Argon Plasma Coagulation

Bo Ram Lee, M.D.[1], Yoo Duk Choi, M.D.[2], Yu Il Kim, M.D.[1], Sung Chul Lim, M.D.[1], Yong Soo Kwon, M.D.[1]
Departments of [1]Internal Medicine and [2]Pathology, Chonnam National University Hospital, Chonnam National University Medical School, Gwangju, Korea

Primary endobronchial schwannomas are extremely rare tumors that originate from Schwann cells. We report a case of primary endobronchial schwannoma. A 44-year-old woman, without respiratory symptoms, was presented with a nodule in the left main bronchus on her chest computed tomography scan. The nodule was removed by a rigid bronchoscopy with argon plasma coagulation. Biopsy confirmed the diagnosis of schwannoma. There was no recurrence during her 4-month follow-up.

Key Words: Neurilemmoma; Bronchi; Bronchoscopy

Introduction

Primary endobronchial schwannomas are extremely uncommon, constituting approximately 2% of benign tracheobronchial tumors[1]. Because of the slow growing nature of these tumors, they rarely cause symptoms when small and are often presented late[1]. However, the patient may be presented with cough, dyspnea, and pneumonia depending on the location and size of the tumor[2]. For the treatment of these benign endobronchial tumors, bronchoscopic removal has been recently reported to be useful[3,4]. However, there is limited information on the bronchoscopic removal of endobronchial schwannoma. We present a case of endobronchial schwannoma that was successfully managed by rigid bronchoscopy with argon plasma coagulation (APC) in a 44-year-old woman.

Address for correspondence: **Yong Soo Kwon, M.D.**
Department of Internal Medicine, Chonnam National University Hospital, Chonnam National University Medical School, 42, Jaebong-ro, Dong-gu, Gwangju 501-757, Korea
Phone: 82-62-220-6575, Fax: 82-62-225-8578
E-mail: yskwon@chonnam.ac.kr
Received: Apr. 19, 2012
Revised: Apr. 30, 2012
Accepted: May 10, 2012

Case Report

A 44-year-old woman was referred to our clinic with a left main bronchus nodule shown in her chest computed tomography (CT) scan. She underwent laparoscopic low anterior resection, liver wedge resection, and cholecystectomy for rectal cancer with liver metastasis approximately 9 months ago. She had no respiratory symptoms and a normal lung sound on physical examination. Her chest radiograph and pulmonary function tests were normal. Chest CT scan revealed a 1.1×1.9 cm endobronchial mass in the left main bronchus without obstructive atelectasis and lung parenchymal invasion (Figure 1A). Fiberoptic bronchoscopy revealed a 1.5 cm sized hypervascular and polypoid mass with no mucosal destruction and causing a near total obstruction of the left main bronchus at 1 cm below the carina (Figure 1B). Biopsy showed a benign vascular lesion which is suspected to be cavernous hemangioma. Rigid bronchoscopy was performed under general anesthesia for treating a benign endobronchial tumor. APC was applied before tumor removal for coagulation and the tumor was then removed by a rigid bronchoscope tip. After removal, APC was applied again for bleeding control (Figure 1C). There were no procedure-related complications. The microscopic ex-

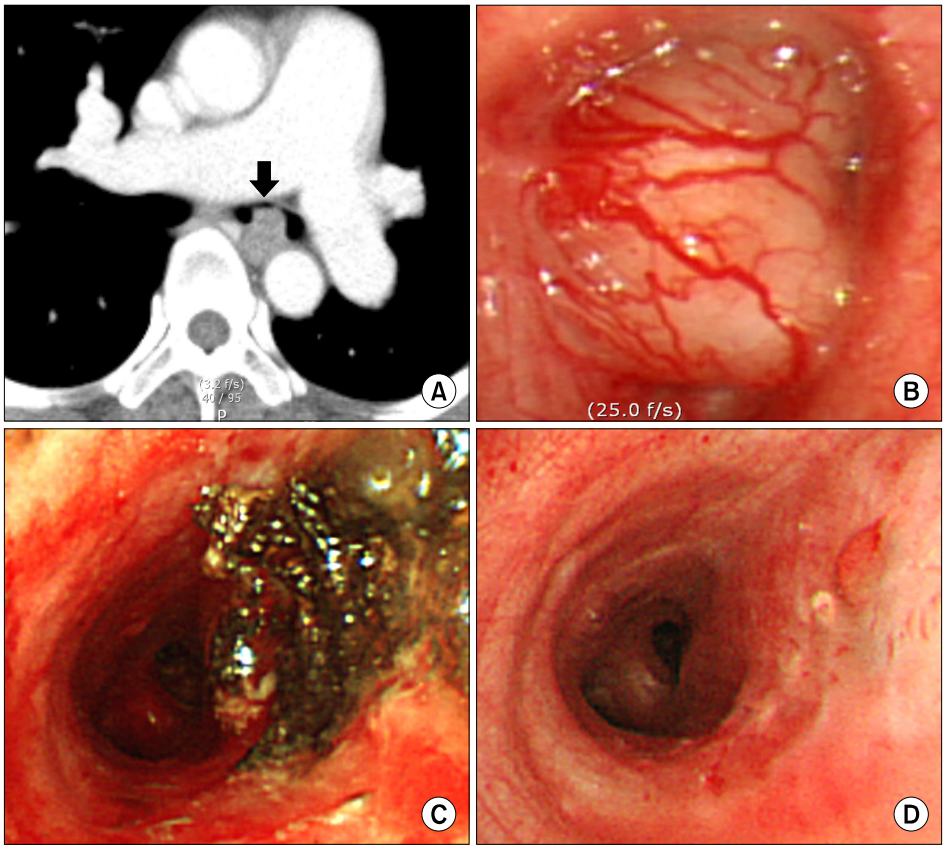

Figure 1. Chest computed tomography (CT) and bronchoscopy images of a patient with primary endobronchial schwannoma. (A) Chest CT showed an oval tumor nodule occupying the left main bronchus (arrow). (B) Bronchoscopic finding showed a polypoid tumor with a smooth surface near totally obstructing the lumen of the left main bronchus. (C) Immediate post-intervention bronchoscopic finding showed an opened left main bronchus and tumor base with a coagulation and vaporization by an argon plasma coagulation. (D) Bronchoscopic finding of four months after bronchoscopic intervention showed a clean tumor base without an evidence of recurrence.

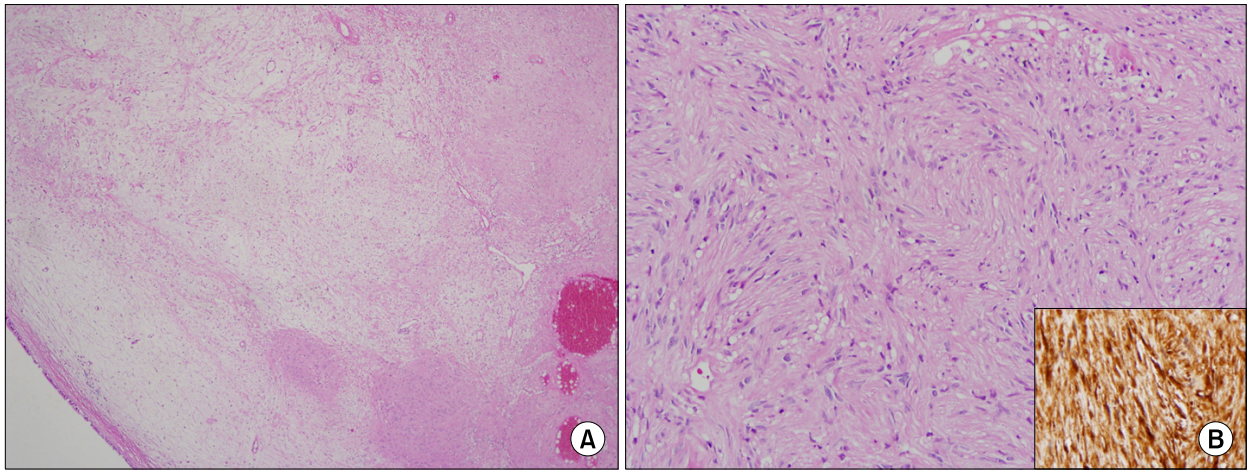

Figure 2. Histological findings of rigid bronchoscopic tumor removal. (A) Photomicrography of a sub-bronchial mass showed a hypocellular lesion containing an edematous degenerative change (H&E, ×40). (B) The tumor was composed of spindle tumor cells showing a palisading pattern without mitosis or necrosis (H&E, ×200). The tumor cells have an immunoreactivity for S-100 (Inset, ×200).

amination revealed fascicles of spindle cells and palisanding nuclei. The nuclei were positive for S-100 protein, whereas results of desmin and smooth muscle actin were negative by immunohistochemical staining. In addition, no malignant transformation was identified (Figure 2). The postoperative course was uneventful, and the patient was discharged on the first post-procedural day.

The patient was monitored in an outpatient clinic and there was no recurrence for the 4-month follow-up period (Figure 1D).

Discussion

This is a case report of endobronchial schwannoma that was completely removed by rigid bronchoscopy with APC.

Bronchial wall schwannoma was first described in 1951 by Straus and Guckien[5] as an extremely rare form of bronchial benign neurogenic tumor. Schwannomas are designated as neoplasms of Schwann cell myelin that are often histologically benign. They are usually well circumscribed and are encapsulated masses arising from peripheral and cranial nerves[6].

Kasahara et al.[2] reviewed 50 cases of pulmonary neurilemmomas reported in Japan and classified them as central and peripheral types according to their localizations. Of these 50 cases, 25 were classified as central (13 at trachea, 12 at bronchus), 13 were peripheral (intrapulmonary lesions), and 12 were combined (central and peripheral lesions). Most cases of the central type had symptoms, such as dyspnea, wheezing, cough, and pneumonia except for 3 bronchial lesion cases that had no symptoms. The most common size of the central type tumors was 1 cm to 3 cm in diameter. In our case, although the tumor was located centrally (left main bronchus) with a size of 1.5 cm in diameter, there were no respiratory symptoms.

Radiologically, the tumor appears as a round, ovoid, or lobulated homogenous mass with sharp borders[7]. In our case, we also found the round nodule on her chest CT scan. However, we could not differentiate this tumor from other endobronchial tumors. A CT scan could reveal the tumor and show its size and the extent to which the tumor is confined within the tracheobronchial lumen without evidence of adjacent invasion, findings that may be helpful for bronchoscopic intervention or surgery.

Surgical resection has been the standard treatment for the tracheobronchial tumors. Although surgical resection should be performed conservatively, a thoracotomy is usually required[2,8]. Recently, bronchoscopic intervention has been shown to be a safe and effective tool for the treatment of a benign tracheobronchial tumor[1,3]. Many different interventional bronchoscopic techniques has been used, such as resection by forceps, APC, Nd-YAG laser, cryotherapy or the use of a snare[9]. These bronchoscopic interventions may avoid the complications and morbidities associated with surgery. APC is a non-contact thermal treatment using ionized argon gas jet flow to conduct electrons[9]. A cheaper equipment compared to the Nd-YAG laser and the ease of using the instrument and flexible applicators are strong advantages of using APC[9]. Although the effect of APC are superficial compared with that of an Nd-YAG laser, APC combined with mechanical debulking could be an effective tool for removing the endobronchial tumors[9,10]. In our case, we applied APC to coagulation before and after tumor removal and for the vaporization of residual tumor after mechanical debulking using the tip of rigid bronchoscopy.

In conclusion, primary endobronchial schwannoma is a rare disease that can occur without any symptoms. Rigid bronchoscopy with APC can be an effective and safe technique for an endobronchial schwannoma.

References

1. Shah H, Garbe L, Nussbaum E, Dumon JF, Chiodera PL, Cavaliere S. Benign tumors of the tracheobronchial tree. Endoscopic characteristics and role of laser resection. Chest 1995;107:1744-51.
2. Kasahara K, Fukuoka K, Konishi M, Hamada K, Maeda K, Mikasa K, et al. Two cases of endobronchial neurilemmoma and review of the literature in Japan. Intern

Med 2003;42:1215-8.
3. Kwon YS, Kim H, Koh WJ, Suh GY, Chung MP, Kwon OJ, et al. Clinical characteristics and efficacy of bronchoscopic intervention for tracheobronchial leiomyoma. Respirology 2008;13:908-12.
4. Suzuki H, Sekine Y, Motohashi S, Chiyo M, Suzuki M, Haga Y, et al. Endobronchial neurogenic tumors treated by transbronchial electrical snaring and Nd-YAG laser abrasion: report of three cases. Surg Today 2005; 35:243-6.
5. Straus GD, Guckien JL. Schwannoma of the tracheobronchial tree. A case report. Ann Otol Rhinol Laryngol 1951;60:242-6.
6. Kurtkaya-Yapicier O, Scheithauer B, Woodruff JM. The pathobiologic spectrum of Schwannomas. Histol Histopathol 2003;18:925-34.
7. Ko JM, Jung JI, Park SH, Lee KY, Chung MH, Ahn MI, et al. Benign tumors of the tracheobronchial tree: CT-pathologic correlation. AJR Am J Roentgenol 2006; 186:1304-13.
8. Takeda S, Miyoshi S, Minami M, Matsuda H. Intrathoracic neurogenic tumors: 50 years' experience in a Japanese institution. Eur J Cardiothorac Surg 2004;26: 807-12.
9. Bolliger CT, Sutedja TG, Strausz J, Freitag L. Therapeutic bronchoscopy with immediate effect: laser, electrocautery, argon plasma coagulation and stents. Eur Respir J 2006;27:1258-71.
10. Ernst A, Simoff M, Ost D, Goldman Y, Herth FJ. Prospective risk-adjusted morbidity and mortality outcome analysis after therapeutic bronchoscopic procedures: results of a multi-institutional outcomes database. Chest 2008;134:514-9.