CASE REPORT

Pleural Empyema Associated With Endobronchial Lipoma

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Bronchial benign tumors comprise fewer than 4% of pulmonary neoplasms. Endobronchial lipoma is an extremely rare benign neoplasm accounting for only 0.1% to 0.5% of all lung tumors. Clinical symptoms of lipoma depend on the location of the tumor, the severity of bronchial obstruction, and the functional and anatomical effects on the parenchyma distal to the obstruction. Computed axial tomography usually reveals the adipose composition of the lipomatous tumor. We report the case of an 83-year-old man diagnosed with community-acquired pneumonia that led to complications: pleural empyema caused by *Haemophilus influenzae* infection and atelectasis of the right middle and lower lobes secondary to a lipomatous endobronchial obstruction. Removal of the bronchial lipoma was performed by laser resection.

Key words: *Endobronchial lipoma. Empyema. Laser therapy.*

Empiema pleural asociado a lipoma endobronquial

Los tumores benignos broncopulmonares representan menos del 4% de las neoplasias de origen pulmonar. El lipoma endobronquial es una neoplasia benigna extremadamente rara, cuya incidencia oscila entre el 0,1 y el 0,5% de todos los tumores del pulmón. Los síntomas clínicos dependen de su localización, del grado de obstrucción bronquial y de las consecuencias morfofuncionantes de dicha obstrucción sobre el parénquima distal. La tomografía axial computarizada suele poner de manifiesto el contenido adiposo del tumor. Presentamos el caso clínico de un varón de 83 años diagnosticado de neumonía adquirida en la comunidad, que se complicó con un empiema pleural por *Haemophilus influenzae* y atelectasia de lóbulos medio e inferior derecho, secundaria a obstrucción endobronquial por lipoma. Se realizó extirpación del lipoma bronquial mediante fotorresección con láser.

Palabras clave: *Lipoma endobronquial. Empiema. Laserterapia.*

Introduction

Endobronchial lipoma is an extremely rare benign neoplasm that may lead to irreversible lesions in the pulmonary parenchyma owing to recurrent obstructive pneumonia caused by the bronchial obstruction. Early diagnosis of endobronchial lipoma and radical treatment are essential for preventing permanent pulmonary lesions. Most patients present respiratory signs and symptoms, among which cough is the most frequent at diagnosis. Endoscopic laser resection is currently considered the treatment of choice according to most authors. However, if irreversible parenchymatous lesions occur, lung resection, lobectomy, and even pneumonectomy may be necessary. We report the case of a patient who presented with pulmonary atelectasis and empyema caused by *Haemophilus influenzae* infection and whose confirmed diagnosis was endobronchial lipoma.

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Case Description

The patient was an active 83-year-old man who had been an ex-smoker for 40 years (40 pack-years). He had a history of surgery for prostatic adenoma in 1982, an episode of acute lithiasic pancreatitis that required hospitalization and later treatment by cholecystectomy in December 2003, and depressive syndrome under treatment with sertraline. The patient came to the emergency department of our hospital with a temperature of 39ºC, expectoration of thick mucus, and pleuritic chest pain. He was prescribed treatment with amoxicillin–clavulanic acid that resulted in partial improvement, so he abandoned the treatment at 4 days. A week later he returned to the emergency department because the symptoms returned. At physical examination the patient was feverish, normotensive, and slightly tachypneic at rest (20 breaths per minute). Auscultation revealed decreased breathing sounds at the base of the right lung. No other abnormalities were found during examination. Blood tests showed an elevated white cell count (21 120 cells/μL) with a left shift (87% neutrophils). Biochemistry showed glucose to be 319 mg/dL; total bilirubin, 1.8 mg/dL; fibrinogen, 1026 mg/100 mL; and urea, creatinine, and transaminases within normal parameters. Coagulation was normal. Basal arterial blood gas measurement showed partial respiratory insufficiency with pH at 7.37; PaO_2, 59 mm Hg; $PaCO_2$, 35 mm Hg, and oxygen saturation, 86%. A chest x-ray showed

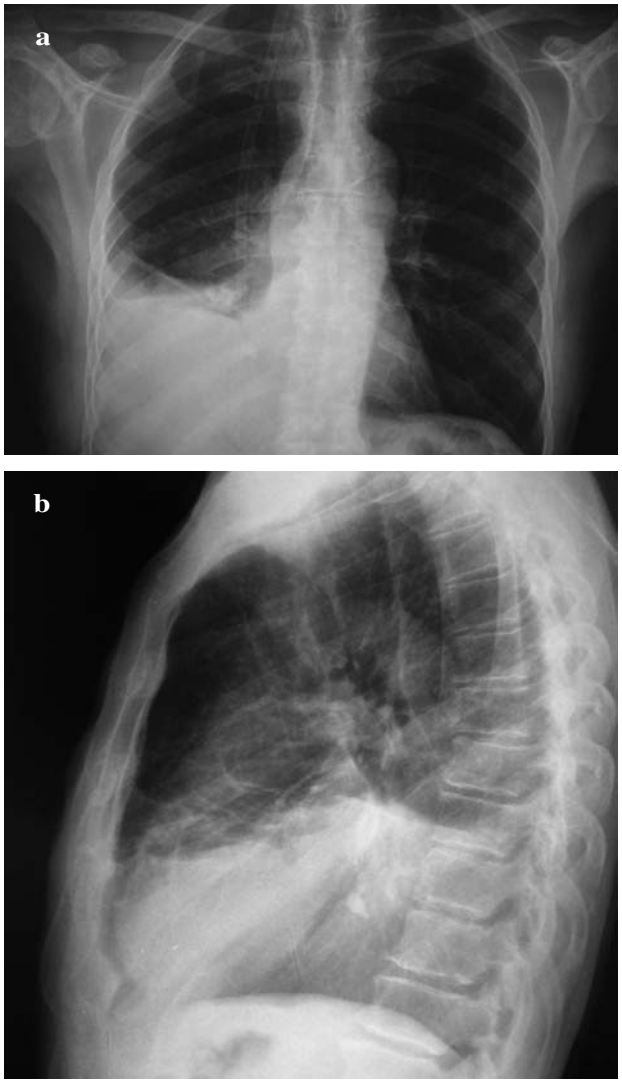

Figure 1. Posteroanterior (a) and lateral (b) chest radiographs showing increased homogeneous density in the lower right hemithorax, indicative of a pleural effusion.

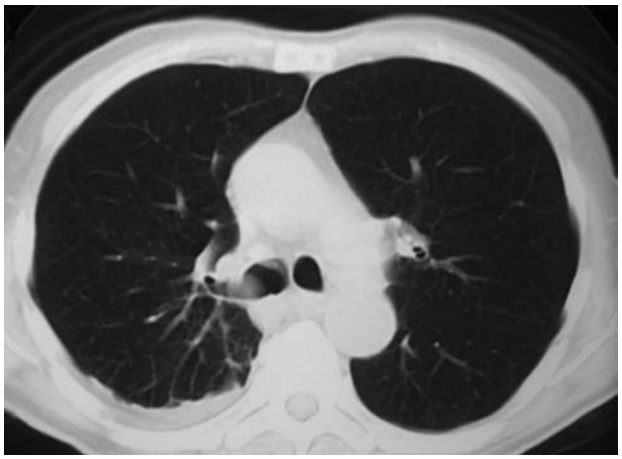

Figure 2. Computed tomography of the chest showing an endotracheal fat density lesion inside the right main bronchus, atelectasis of the right middle and lower lobes, and small pleural effusion.

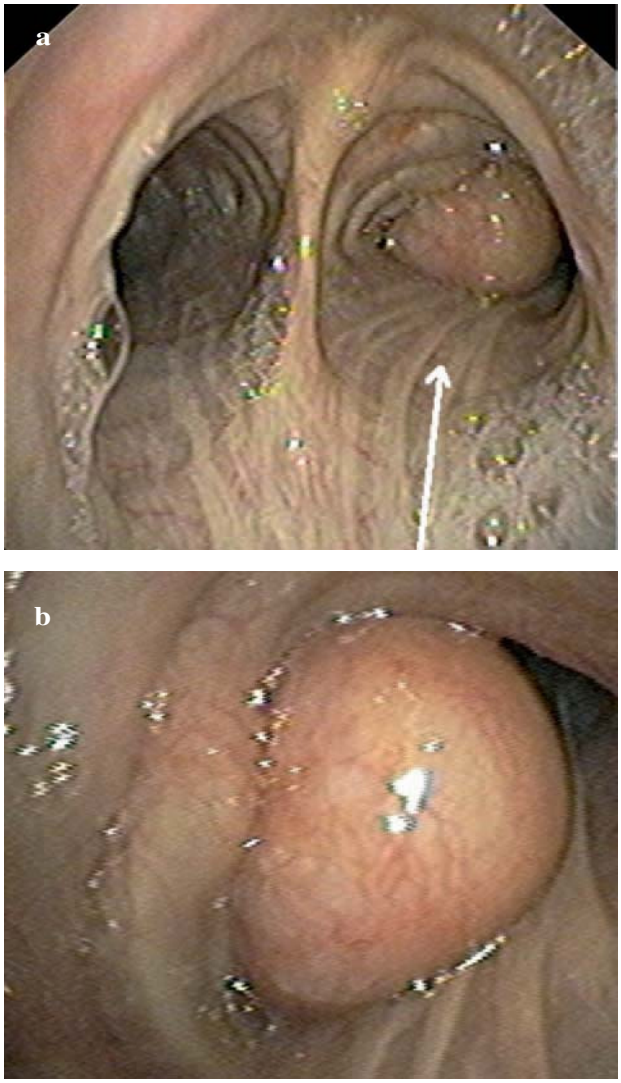

Figure 3. Endoscopic images showing a well defined, smooth, yellow, lipomatoid neoplasm with sessile attachment on the medial face of the right main bronchus.

increased homogeneous density in the lower right hemithorax, indicating pleural effusion (Figure 1). Thoracentesis obtained a serosanguineous pleural fluid sample classified as an exudate with a pH of 7.15, a serum adenosine deaminase concentration of 33 IU/L, a red blood cell count of 120 000 cells/μL, and a white blood cell count of 2700 cells/μL (87% neutrophils). Gram-negative coccobacilli were observed. Treatment with amoxicillin–clavulanic acid and azithromycin was begun, and a chest tube was placed that drained only 100 mL of serosanguineous fluid in 48 hours. The pleural fluid grew biovar 1 *H influenzae* that was sensitive to amoxicillin–clavulanic acid, clarithromycin, and ciprofloxacin. A computed tomography (CT) scan performed after removal of the chest tube revealed a fat density lesion inside the right main bronchus, atelectasis of the right middle and lower lobes, and a small pleural effusion on the right side (Figure 2). Exploration with a fiberoptic bronchoscope revealed a well-defined, glossy, smooth-surfaced, yellowish endobronchial lesion with sessile attachment on the medial face of the right main bronchus (Figure 3). Bronchial

brushing results were negative for malignancy and a bronchial biopsy of the neoplasm yielded nonrepresentative material. Laser resection of the endobronchial neoplasm was performed by endoscopy with no complications. Pathology of the resected lesion confirmed the diagnosis of lipoma.

Discussion

An endobronchial lipoma is an extremely rare benign pulmonary tumor accounting for 0.1% to 0.5% of all pulmonary neoplasms. Such lipomas are more frequent in men and the incidence peaks in the fifth and sixth decades of life, the mean (SD) age of patients being 60 (11.4) years. In most cases in the literature, the tumor is located in the first 3 segments of the tracheobronchial tree and is more frequent on the right side—as in the present case, in which the tumor was in the right main bronchus. In reports, tumors vary in diameter from less than 1 cm to more than 7 cm, the mean diameter being 2 (1.5) cm.[1,2]

Endobronchial lipomas are usually round or oval, smooth-surfaced, yellowish, with narrow attachments, and coated with respiratory mucus. Microscopically they appear as an accumulation of adipocytes partitioned by mucus membrane. Cells have vascular stems, and the accumulation is covered with the ciliated cylindrical epithelia of the respiratory tract. Some authors consider smoking a significant risk factor for developing endobronchial lipoma. In fact, in a recent review, Masashi et al[1] reported finding 64 cases of lipoma published in Japan, 74% of which were in smokers. Obesity has also been suggested to be a risk factor, although that claim is disputed.

At diagnosis most patients present symptoms, the most frequent of which are—in order of presentation—productive cough, hemoptysis, fever, and dyspnea. For asymptomatic patients diagnosis is established as a consequence of chance findings in chest x-rays. The most frequent radiographic manifestation in such patients is either a parenchymatous consolidation due to lobular atelectasis or lung volume loss distal to the obstruction. Other less frequent radiographic findings are nodules and pulmonary consolidation and, even less frequent, pleural effusion. Our patient presented atelectasis of the right middle and lower lobes and exudative pleural effusion, the culture of which was positive for *H influenzae*.

In the exhaustive review by Takiguichi,[3] pleural effusion was present in only 4 cases, and empyema occurred in only 1 (a 62-year-old woman who began with a massive left pleural effusion secondary to a *Streptococcus intermedius* infection). The only other report of associated empyema was in a 56-year old man who presented pneumonia in the middle and lower lobes and empyema.[4] Our patient's presentation with pleural empyema was therefore an exceptional finding in a case of endobronchial lipoma.

In 1986 Matsumura et al[5] reported the first case of lipoma identified by CT, a technique that usually reveals the adipose content of the tumor.[6] Magnetic resonance shows lipoma as a high density signal in T1 and a medium density signal in T2,[6,7] as is the case for fat density lesions in other locations. Bronchial biopsy of the lesion does not always lead to a confirmed diagnosis, and indeed it did not in the case of our patient. Some authors have reported that recurrent obstructive pneumonia secondary to bronchial obstruction can produce enough nuclear atypias for the brushings and cytology to indicate malignancy.[8] Therefore, in cases in which the biopsy, cytology, and brushings are not conclusive, a CT scan of the chest is an important diagnostic tool since it enables early diagnosis and avoids unnecessary thoracotomies.[7] Some authors have claimed that the finding of a homogeneous adipose consolidation in a CT scan can be considered diagnostic.[9,10]

Surgical resection by thoracotomy (pneumonectomy, lobectomy, or tumor resection) has been used, although since the description of the first endoscopic surgical intervention in 1984,[11] that technique has become the treatment of choice for bronchial lipoma. However, surgical resection by thoracotomy is indicated for the following situations: when a confirmed diagnosis is difficult to obtain by other techniques, when association with a malignant tumor is suspected, when peripheral lung destruction is present due to atelectasis and persisting pneumonias, when extrabronchial tumor growth is present and, lastly, when the results of endoscopic techniques point toward adverse consequences of multidirectional tumor growth.[1]

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