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CASE REPORT

Endoscopic removal of a chondromatous hamartoma by bronchoscopic electrosurgical snare and argon plasma coagulation

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ABSTRACT: ***Endoscopic removal of a chondromatous hamartoma by bronchoscopic electrosurgical snare and argon plasma coagulation. B.T. Uskul, R. Baran, F.E. Turan, O. Sogukpinar, F. Aksoy, H. Turker.***

A 31-year-old woman presented with a cough, pain on the left side on deep inspiration, dyspnea, and fever. A chest x-ray showed pneumonic infiltration of the left middle and lower lung and decreased left hemithorax volume. A computed tomography (CT) revealed an occlusion of the left main bronchus by an intraluminal tumour. Bronchoscopic biopsy specimens suggested an endobronchial hamartoma. Therefore, we resected the tumour endobronchially using a bronchoscopic electrosurgical snare and argon plasma coagulation. ***Monaldi Arch Chest Dis 2007; 67: 4, 238-240.***

Keywords: Bronchial tumour; hamartoma; bronchoscopy, electrosurgical; argon plasma; coagulation.

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Hamartomas are the most common benign lung tumours. They are mostly localized to the parenchyma, although 10-20% are located endobronchially. Endobronchial hamartomas are derived from the bronchi and grow through the lumen occluding the bronchi, which causes atelectasis and recurrent pneumonia [1].

Since hamartomas are benign, it has been suggested that they should be treated endoscopically primarily, although if the tumour is large or the lung parenchyma distal to the obstruction is damaged irreversibly, surgical resection should be considered [2].

In this paper, we present a case of endobronchial chondromatous hamartoma that was treated successfully using a bronchoscopic electrosurgical snare and argon plasma coagulation.

Case report

A 31-year-old female non-smoker was admitted with a cough, pain on the left side on deep inspiration, dyspnea, and fever. The chest x-ray showed a pneumonic infiltrate occupying the left middle and lower lung, and a decrease in left hemithorax volume. On pulmonary auscultation, crepitant rales were heard in the left middle and lower lung. She was diagnosed with pneumonia and treated with antibiotics. Her fever fell on the sixth day of therapy, but exertional dyspnea and the non-productive cough persisted. The chest x-ray showed that the infiltration in the left lower lobe had regressed, but still persisted. Thoracic computed tomography (CT) showed pneumonic infiltrations in the left lower lobe, including air bronchograms, and an endobronchial mass in the left main bronchus (fig. 1). On fiberoptic bronchoscopy (EB-270T videobronchoscope, Fujinon Corp., Saitama, Japan), a yellowish, bright-surfaced, lobulated, stalked mass, which was mobile during respiration, was observed in the distal portion of the left main bronchus occluding 85% of the lumen (fig. 2). It was diagnosed as a hamartoma based on the bronchoscopic biopsy.

A second bronchoscopy was performed under general anesthesia with a rigid bronchoscope (size 8.5). The hamartoma was resected with an electrosurgical snare (Olympus SD-7C-1) after moving the fiberoptic bronchoscope forward within the rigid bronchoscope. After minimal manipulation of the lesion with the electrocautery probe, the electrosurgical snare was looped around the base of the hamartoma (fig. 3). This permitted hemostatic transection of the base of the lesion and removal of the bulk of the tumour.

After resecting the hamartoma with the electrosurgical snare, the base on the bronchial wall was coagulated completely with argon plasma (fig. 4). No complications occurred. On histopathologic evaluation of the resected tumour, it was diagnosed as a chondromatous hamartoma. Following the procedure, the exertional dyspnea and non-productive cough disappeared and the patient was discharged.

One month later, on follow-up fiberoptic bronchoscopy, the left main bronchus was completely open and no residual tissue was seen in the resection area (fig. 5). Moreover, no recurrent symptoms or radiologic abnormalities were recorded.

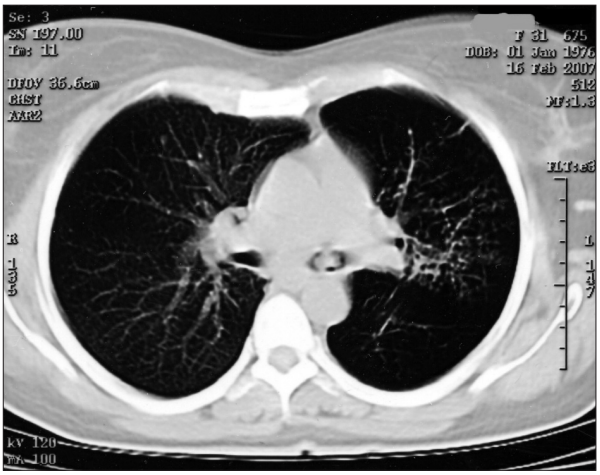

Fig. 1. - A soft tissue mass occluded the left main bronchus almost completely on thoracic CT.

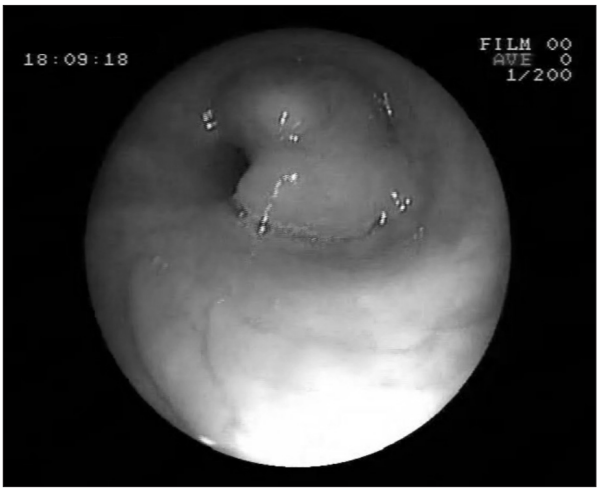

Fig. 2. - The bronchoscopic appearance of the endobronchial hamartoma.

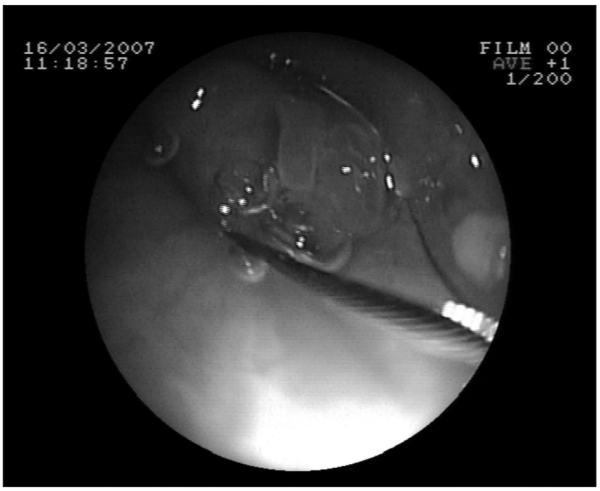

Fig. 3. - Placing the electrosurgical snare loop around the base of the hamartoma.

Discussion

Hamartomas can involve cartilaginous, adipose, fibrous, and epithelial tissues histologically. Although parenchymal hamartomas are generally asymptomatic, patients with endobronchial hamartomas have at least one respiratory symptom. The most common symptoms are recurrent pulmonary infections, obstructive pneumonia, and hemoptysis [1].

Conventional radiography and CT can show post-obstructive changes, such as atelectasis or pneumonia. CT is particularly helpful when the lesion contains abundant fat [3]. On thoracic CT in our case, a mass lesion was detected in the lumen of the left main bronchus.

Endobronchial hamartomas are easily diagnosed on bronchoscopy. They are generally well circumscribed, yellowish, and have a smooth shining surface with a wide sessile base [1]. The traditional treatment of endobronchial hamartoma is thoracotomy with bronchotomy, lobectomy, or lung resection [4]. Given the paucity of data, a direct comparison between endoscopic removal and surgical resection is difficult. The disadvantage of therapy using bronchoscopic techniques is recur-

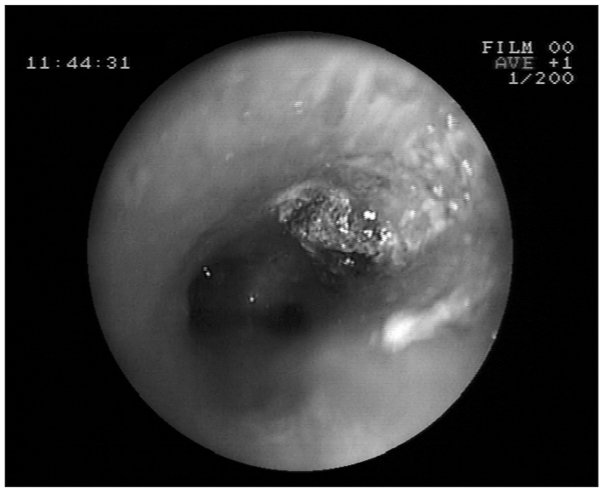

Fig. 4. - Total coagulation of the base of the hamartoma with argon plasma after snare resection.

Fig. 5. - The open left main bronchus one month after the fiberoptic bronchoscopy procedure.

rence. Borro *et al*. reported similar findings at the 3-year follow-up of seven cases of endobronchial hamartomas: two were treated with endoscopy, two with lobectomy, one with pneumonectomy, and one with bronchotomy [4]. Of the 43 endobronchial hamartomas in the series of Cosio *et al*., 17 were treated with rigid bronchoscopy and Nd:YAG laser application. Of these, 13 were removed completely and four recurred [1].

Several techniques have been used to resection endobronchial hamartomas successfully. The most commonly reported techniques are excisional debulking with a rigid bronchoscope [4, 5] and resection with a Nd:YAG laser [1, 2]. Recently, complete resection achieved via electrocautery and a Nd:YAG laser thorough a flexible bronchoscope has been reported [2, 6].

Endobronchial electrosurgery is inexpensive and easy to perform for the complete resection of benign polypoid tumours, like tracheal and bronchial fibrolipomas, hamartomas, and papillomas [6, 7]. Two methods can be used in endobronchial electrosurgery: diathermic snare excision of the tumour and tumour electrodestruction with a cautery probe. Gerasin and Shafirovsky [7] reported that performing endobronchial electrocautery by moving a fiberoptic bronchoscope forward within a rigid bronchoscope under general anesthesia is the preferred method, because of the possibility of resecting large tissue pieces with electrocautery during the procedure, rather than needing to carry out recurrent intubations with a fiberoptic bronchoscope. Since the hamartoma blocked the left main bronchus almost completely, and in order to provide full ventilation while controlling bleeding, we performed the procedure via a fiberoptic bronchoscope placed in a rigid bronchoscope.

The main factor limiting electrosurgical snare application is failure to place the loop around the tumour base and potentially the most frequent problem using electrocautery is incomplete resection of the lesion. Complications of electrocautery include hemoptysis, and perforation and burning of the tracheal wall. The extent and severity of the damage is related to the contact time of the electrocautery probe [6, 7].

Argon plasma coagulation (APC) with a flexible bronchoscope produces little smoke, leading to good visual control during the coagulation procedure. Compared with a laser, the penetration depth of APC is constant and controllable, making APC procedures less complicated. In addition, the effect of APC on the tumour equals that of a laser [8]. In our case, after we resected the hamartoma with an electrosurgical snare, we performed coagulation with argon plasma in order to prevent recurrence from the tumour base on the bronchial wall. Therefore, the base of the tumour was coagulated completely.

One of the most important indications of endobronchial ultrasonography (EBUS) is determination of the depth of tumour invasion of tracheobronchial lesions. The ability to determine the depth of tumour invasion using EBUS represents a major advance in bronchoscopic technology [9]. After endoscopic removal, a follow-up with EBUS might be useful to assess the extension and deep of tracheobronchial wall involvement of the tumour implant base.

Although the standard therapy for endobronchial hamartomas is surgical, successful results can also be obtained using endoscopic methods. In symptomatic, elective cases, we believe that performing coagulation with argon plasma, in order to prevent recurrences that could arise from the base on the bronchial wall after resecting the hamartoma with an electrosurgical snare, is a good alternative.

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