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Recurrence of endobronchial lipoma

Abstract

Benign tumours of the lung and endobronchial tree are uncommon. Endobronchial lipomas are extremely rare, with an incidence ranging from 0.1 to 0.5% of all lung tumours. Endobronchial lipomas originate from fat cells located in the peribronchial (and occasionally the submucosal) tissue of the main bronchi. This paper presents the case of a patient in whom, four years after transbronchial resection of an endobronchial lipoma, recurrence of the lesion in the same lung was confirmed. The diagnosis was made on the basis of a CT scan, which detected lesions with previously identified morphology.

Key words: benign tumour of the lung, endobronchial lipoma, interventional bronchoscopy

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Case presentation

A 56-year-old, obese (body mass index [BMI] 32.27 kg/m^2) male patient, hospitalised at his local hospital for lobar pneumonia caused by Mycoplasma pneumoniae, was referred to the Institute of Tuberculosis and Lung Diseases in Warsaw, Poland, due to right-sided hilar enlargement with a suspected lung tumour (Fig. 1).

A computed tomography (CT) scan performed at the Institute revealed an abnormal mass in the right main bronchus measuring 25 × 16 mm and filling the bronchus. Within the mass, the scan revealed areas with a negative attenuation coefficient, suggesting the presence of adipose tissue (Fig. 2).

Bronchoscopy revealed a smooth, soft, shining, balloting, pedunculated tumour in the right main bronchus. The tumour stalk originated in the right upper lobe bronchus. Autofluorescence bronchoscopy revealed areas of absent fluorescence within the tumour, with normal fluorescence in the neighbouring tissues. Rigid bronchoscopy was

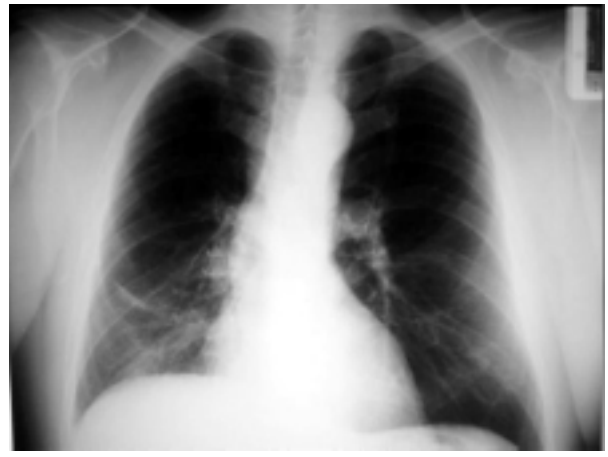

Figure 1. Chest X-ray. Enlarged shadow of the right hilum with features of atelectasis

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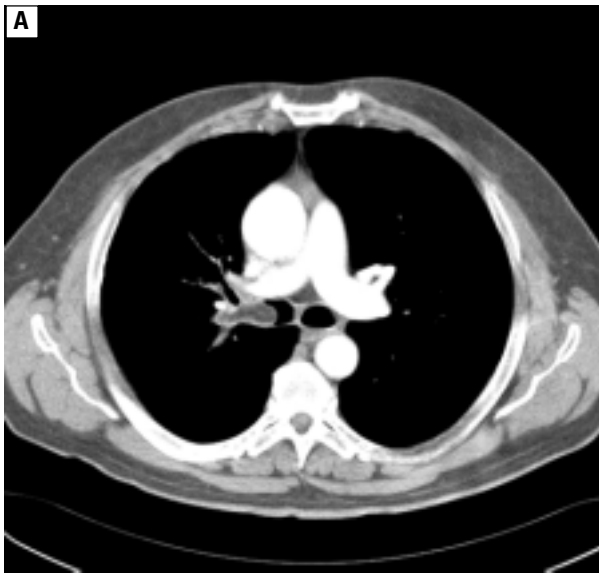

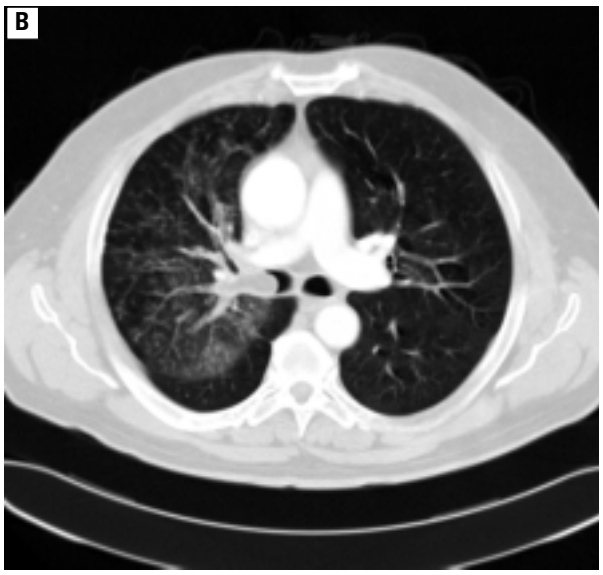

Figure 2. Chest CT image. (**A**) mediastinal window. Tumour demonstrating density of the fatty tissue in the main right bronchus; (**B**) lung window. Ground glass opacity due to partial atelectasis

performed and the entire tumour was resected using forceps.

Histopathological examination revealed a growth of a mature adipose tissue consistent with bronchial lipoma (Fig. 3).

Following the procedure, the patient was in a good condition and was discharged home, where he stayed in the care of his GP.

About four years after hospitalisation, the patient developed a respiratory tract infection with fever, which was managed symptomatically. Two months after the infection, the patient, without any significant respiratory symptoms, was referred to the Institute again with a suspected tumour of the right lung based on a chest radiogram which revealed signs of segmental atelectasis in the posterior segment of the upper lobe of the right lung (Fig. 4).

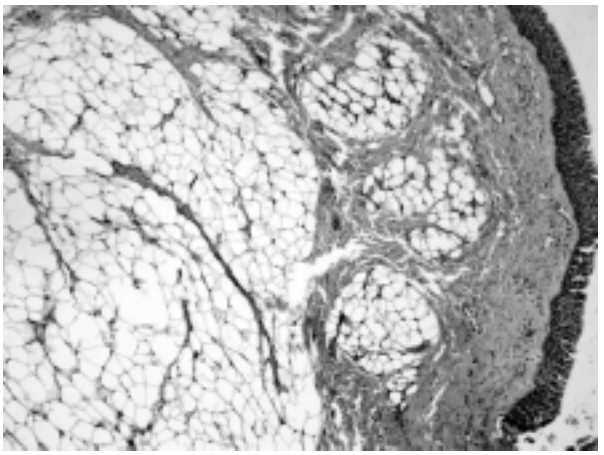

Figure 3. Microscopic image. Endobronchial lipoma. Visible growth of mature fatty tissues in the bronchus wall. Microphotography. Hematoxylin-eosin stain. Large magnification (200 ×)

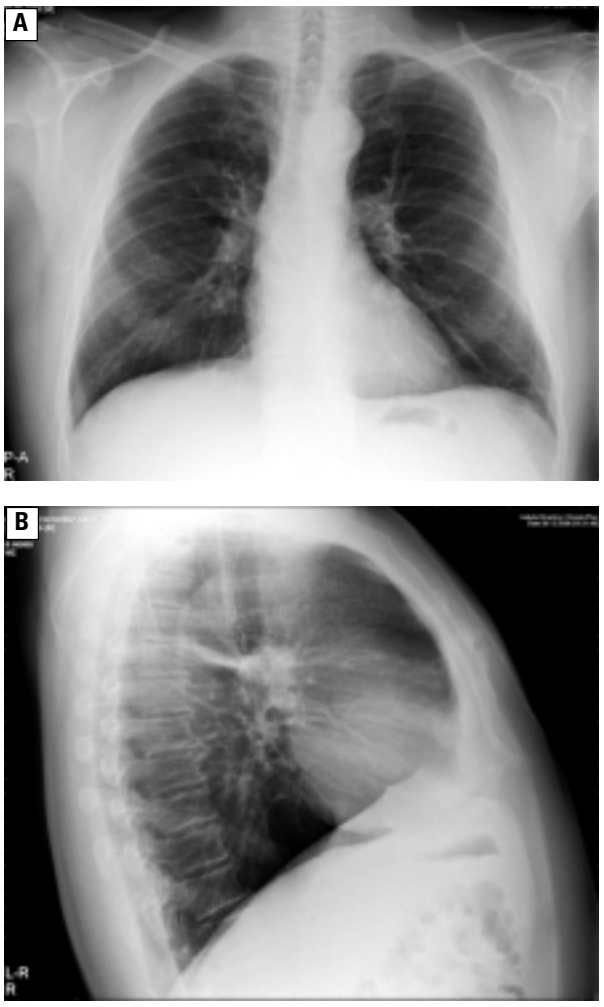

Figure 4. Posteroanterior (**A**) and lateral (**B**) chest X-ray. Atelectasis in the second right segment

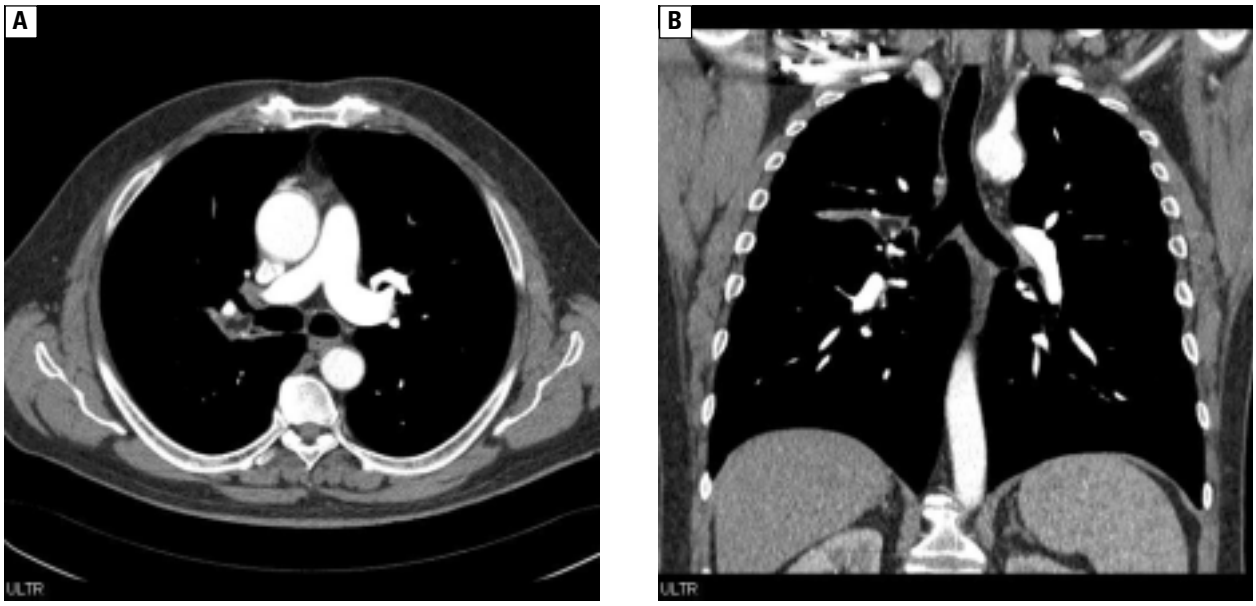

Figure 5. CT image on the mediastinal window — axial section (**A**) and frontal reconstruction (**B**). The lipoma in the right upper bronchus. Atelectasis of the second right segment

The CT scan revealed a structure bulging into the upper lobe bronchus and the distal segment of the main bronchus, completely filling the bronchus leading to segment 2. The negative density of the lesion on CT indicated the presence of adipose tissue and suggested recurrent lipoma (Fig. 5 and 6).

Bronchoscopy revealed a widening of the right upper lobe carina. On the anterior wall of the right upper lobe bronchus there was a whitish nodule, and at the ostium of the upper lobe bronchus, just before the bifurcation leading to segments 2 and 3, there was a pale pink, shining, smooth and possibly pedunculated tumour.

Again, histopathological examination of the collected biopsies revealed bronchial lipoma.

An unsuccessful attempt was made to remove the lesion through the bronchoscope using a loop and a basket. Bronchoscopy was repeated under general anaesthesia using a laser and partial patency of the bronchus was restored. The lesion could not, however, be removed, due to technical difficulties.

After about a month, the patient was readmitted to the Institute for resection of the remaining tumour. The entire lesion was successfully removed. The base of the tumour was evaporated using a laser. A follow-up bronchoscopy and CT scan seven months after the procedure showed normal patency of the bronchus.

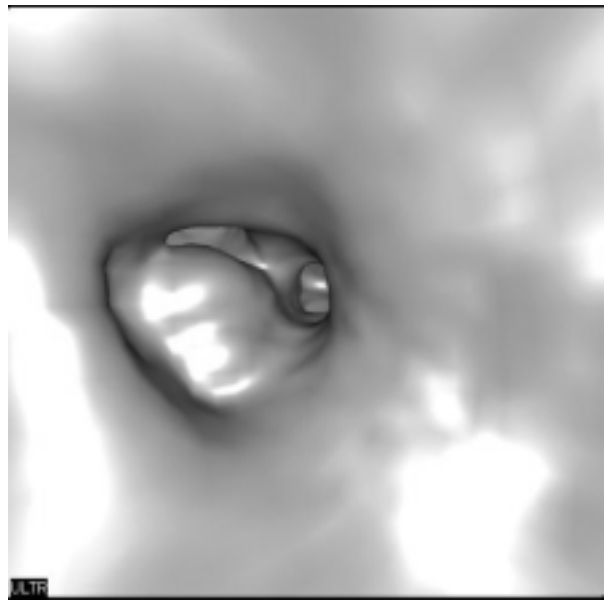

Figure 6. Virtual bronchoscopy. Tumour on the anterior wall of the right upper bronchus

Discussion

Most lung tumours are malignant. Benign tumours occur sporadically, with lipoma being one of the uncommon ones, accounting for 0.1% of all lung tumours [1] and 1.4–13% of benign lung tumours [2].

Endobronchial lipomas are seen in 80% of such patients. They are usually composed of mature adipose cells of the bronchial tree submucosa [1] and are most commonly localised in the main and lobar bronchi and only very rarely in the lumen of the trachea. Endobronchial lipomas range in size from 3 to 65 mm [3]. Pa-

tients are aged from 25 to 78 years [2]. Endobronchial lipomas are considerably more common in men [1, 3].

The first case of endobronchial lipoma treated by endobronchoscopic resection was published by Kernan in 1927 [2].

Many researchers believe that smoking and obesity are the risk factors [1]. The tumour has been shown to occur considerably more often in patients with a high body mass index and a high smoking index (number of packet-years) [3]. There is, however, no sufficient explanation for this relationship.

Our patient had not smoked for 15 years, although he had a history of smoking for many years until then.

There have been no reports of malignant transformation of a lipoma, although there have been cases of a lipoma co-existing with a malignant lung tumour [3].

Clinical manifestations include cough (72%), progressive dyspnoea (26%), chest pain (21%), haemoptysis (23%), recurrent pneumonia (17%), and fever (18%) [2]. However, in a certain group of patients, clinical manifestations are absent. A patient has been reported in whom endobronchial lipoma was followed up for four years; the tumour did not increase in size and did not cause any clinical signs or symptoms [2, 4].

Endobronchial lipomas, like other benign lung tumours, are slowly-growing tumours whose clinical manifestations depend on the degree of bronchial obstruction [5]. They can therefore remain undiagnosed for months, or even years. The time from the onset of symptoms to histopathological diagnosis ranges from several months to several years [6].

These tumours are of considerable clinical significance because they initially cause the same signs and symptoms as malignant tumours and often lead to partial lung resection due to persistent atelectasis. Dyspnoea develops as a result of bronchial occlusion, which is often misdiagnosed and treated as asthma [7].

The picture of endobronchial lipoma on a chest radiogram is uncharacteristic and it is impossible to differentiate between a benign lesion and a malignant one based on radiological studies alone [5]. A CT scan demonstrating an endobronchial tumour that contains adipose tissue and shows no tumour enhancement following administration of an intravenous contrast medium is of the utmost diagnostic importance [2]. The densities of the lesions are negative and range from –50 to –150 HU [5]. It is believed that the predominance of adipose tissue within the tumour warrants the diagnosis of lipoma. In our case, the CT scan was of considerable diagnostic significance.

Computed tomography is also valuable in precisely establishing the tumour location. According to the literature, 66% of lipomas, as was the case with our patient, are found on the right side and within the first three divisions of the bronchial tree [1].

Differential diagnosis of the lesion should include all other endobronchial lesions containing adipose tissue [1, 5] including, above all, hamartoma-like tumours, thymolipoma, angiolipoma, liposarcoma, leiomyoma, teratoma. These tumours, in contrast to lipoma, also contain soft tissue structures and calcifications [8].

Endoscopically, lipoma has the appearance of a soft, poorly vascular, white, grey or yellowish mass. It is most commonly pedunculated, although it is sometimes wide-based [2]. Bronchoscopy results are not always reliable due to the fibrous capsule of the tumour [9] and because of the presence of inflammatory cells in the bronchial tree associated with chronic inflammation triggered by the presence of the tumour [10].

Studies show that treatment should be minimally invasive. Transbronchial resection of the lesion during bronchoscopy is considered the treatment of choice. A centrally located lesion, such as one in the main bronchus, may be removed during bronchoscopy [1] and such an attempt was successfully made in our patient. Should this proves impossible, however, surgical resection should be considered.

Surgery should be considered in patients in whom histopathological diagnosis could not be obtained and in whom it is suspected that the lesion might be malignant, or if the location of the tumour renders the tumour impossible to remove during bronchoscopy, or if persistent changes (long-standing atelectasis, bronchiectasis) develop distally from the tumour [1, 5].

In our patient, a pedunculated lesion originating from the right upper lobe bronchus was identified twice: during the first hospitalisation the tumour mass filled the main bronchus, and during the second one the mass filled the bronchus leading to segment 2 of the right lung. Due to the same origin, the second tumour is more likely to have been a recurrent tumour rather than a de novo lipoma arising close to the previous one.

Early diagnosis and precise determination of location of endobronchial lipomas based on CT imaging help to avoid serious complications and enable the patient to make a swift recovery [8].

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