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Pulmonology

Endobronchial Hamartoma Mistaking for Lung Cancer: A Case Report

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Abstract | **Case Report**

Pulmonary hamartoma is the most common benign lung tumor, but its endobronchial (proximal, intraluminal) form is uncommon, accounting for roughly 3% to 20% of pulmonary hamartomas across published series. In smokers, its clinical, radiological, and bronchoscopic presentation can closely mimic a bronchogenic carcinoma, creating a genuine diagnostic pitfall. We report the case of a 66-year-old man, a former heavy smoker (40 pack-years, cessation 12 years earlier), admitted for low-volume hemoptysis that developed after one year of an isolated dry cough. Contrast-enhanced chest CT revealed an ill-defined, necrotic-centered tissue mass of the right lower lobe measuring 72 × 53 mm, together with cylindrical bronchiectasis in the right upper lobe and left lower lobe, and a suspicious, heterogeneously enhancing left adrenal nodule (15 × 13 mm). Flexible bronchoscopy showed a glistening, cauliflower-like endobronchial mass at the entrance of the bronchus intermedius, which remained passable to the scope. Histopathological examination of the endobronchial biopsies concluded in a bronchial hamartoma, with mature adipocytic nests within a loose, myxoid fibro-connective stroma and a regular, non-atypical ciliated respiratory epithelium — with no evidence of malignancy. This observation illustrates the diagnostic pitfall that endobronchial hamartoma can represent in a heavy smoker with hemoptysis, and underlines the essential role of histology in confirming the diagnosis before any radical therapeutic decision.

Keywords: Bronchial hamartoma; pulmonary hamartoma; hemoptysis; endobronchial tumor; flexible bronchoscopy; differential diagnosis; lung cancer.

INTRODUCTION

Pulmonary hamartoma accounts for 5% to 8% of resected solitary pulmonary nodules and is the most common benign neoplasm of the lung [1,2]. It is a mature, disorganized mesenchymal proliferation composed, in variable proportions, of cartilage, fat, loose connective tissue, and smooth muscle, covered by a normal respiratory-type epithelium [3]. While its usual location is peripheral, within the lung parenchyma, a proximal endobronchial form also exists and is far less common. This form carries a real risk of misdiagnosis as bronchogenic carcinoma — particularly in smokers — because of overlapping clinical, radiological, and bronchoscopic features. We report such a case and discuss, in light of the literature, the epidemiological, clinical, radiological, endoscopic, and histopathological features of endobronchial hamartoma, as well as its management.

CASE REPORT

Patient history and presenting complaint

The patient was a 66-year-old man with a 40-pack-year smoking history who had quit smoking 12 years earlier. He had no other known medical or surgical history and was on no regular medication. There was no reported occupational or environmental exposure of note, and no family history of lung disease.

His current illness began approximately one year before admission with an isolated dry cough, without fever, weight loss, night sweats, chest pain, or dyspnea. This cough persisted over several months without any specific work-up at the time. The clinical course changed 15 days before admission, with the onset of low-volume hemoptysis — streaks of blood mixed with sputum, without frank hemoptoic expectoration and without hemodynamic repercussion — which prompted him to seek care and led to his hospitalization in our pulmonology department for further evaluation.

Physical examination

On admission, the patient was afebrile, hemodynamically stable, and eupneic, with a respiratory rate within normal limits and oxygen saturation adequate on room air. Auscultation of the chest was unremarkable, with no localized crackles, wheeze, or diminished breath sounds to suggest bronchial obstruction or associated pneumonia. There was no digital clubbing, no palpable peripheral lymphadenopathy (cervical, supraclavicular, or axillary), and no hepatomegaly or other abdominal mass on examination. The remainder of the general and systemic examination was normal, with no other extrathoracic signs suggestive of metastatic spread.

Laboratory investigations

Baseline blood work revealed a biological inflammatory syndrome, with a C-reactive protein of 82 mg/L, together with normochromic, normocytic anemia at 11.6 g/dL.

Imaging

A first-line chest radiograph showed a heterogeneous, water-density (soft-tissue) opacity at the right lung base, prompting further cross-sectional imaging.

Contrast-enhanced computed tomography of the chest, abdomen, and pelvis was performed and demonstrated:

- an ill-defined, irregularly marginated tissue mass in the posterior segment of the right lower lobe, heterogeneous with a necrotic center, measuring 72 × 53 mm — an appearance more suggestive, at first glance, of a primary bronchogenic neoplasm than of a benign lesion;
- cylindrical, cystic-appearing bronchiectatic changes in the right upper lobe and in the postero-basal segment of the left lower lobe, likely reflecting chronic distal airway changes;
- a left adrenal nodule, ovoid and heterogeneous, showing heterogeneous enhancement after contrast administration, measuring 15 × 13 mm, with an appearance raising concern for a secondary (metastatic) deposit rather than a simple adenoma.

Taken together, the imaging pattern — a necrotic pulmonary mass with an associated suspicious adrenal nodule in a heavy former smoker — was highly suggestive of a primary lung cancer with adrenal metastasis, and this was the leading working diagnosis at the time of the CT report.

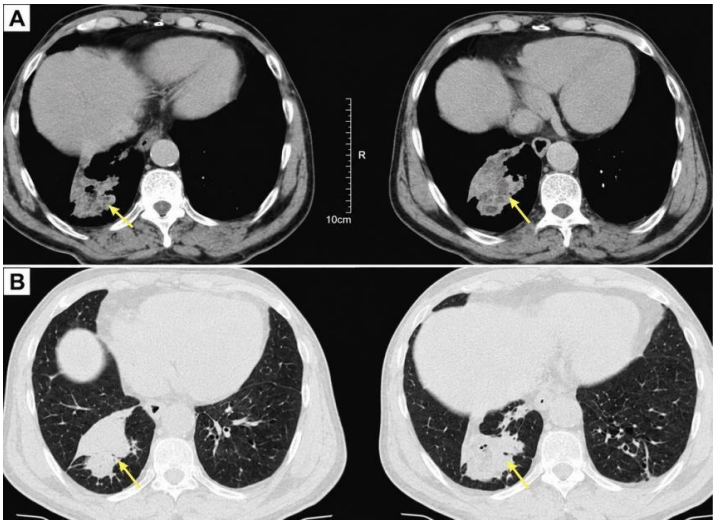

Figure 1: Axial chest CT images showing an irregular, heterogeneous tissue consolidation in the right lower lobe

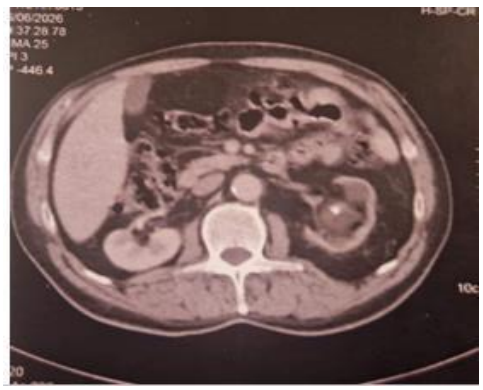

Figure 2: Axial abdominal CT image showing an adrenal nodule, suspicious for secondary involvement Bronchoscopy

Flexible fiberoptic bronchoscopy was performed to sample the lesion directly. It revealed a glistening, pink, cauliflower-like endobronchial mass located at the entrance of the bronchus intermedius. Despite its bulky, exophytic appearance, the airway distal to the lesion remained passable, allowing the bronchoscope to be advanced beyond it. Multiple endobronchial forceps biopsies were taken from the mass for histopathological analysis.

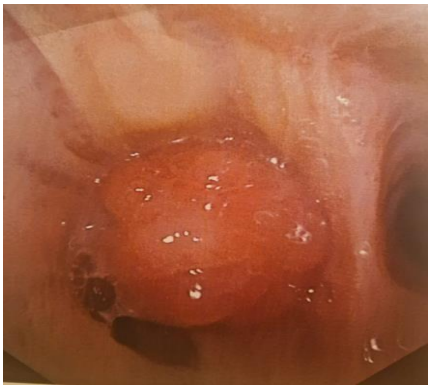

Figure 3: Bronchoscopic view showing a rounded, exophytic endobronchial lesion partially obstructing the bronchial lumen

Histopathology

Microscopic examination of the biopsy specimens showed a polypoid formation with a loose, hyalinized, and myxoid fibro-connective tissue axis containing nests of mature adipocytes, without cytonuclear atypia. This stroma was covered by a regular, ciliated, pseudostratified respiratory-type epithelium, likewise free of any cytonuclear abnormality. This histological pattern was diagnostic of a bronchial hamartoma, with no features to suggest malignancy — in sharp contrast with the pre-biopsy clinical, radiological, and endoscopic impression.

Clinical course

Once the benign nature of the endobronchial lesion was histologically confirmed, the initial working diagnosis of bronchogenic carcinoma with adrenal metastasis could not be sustained on the basis of this lesion alone. The discordance between the alarming imaging/endoscopic appearance and the benign histology was the defining feature of this case, and is discussed below.

DISCUSSION

Pulmonary hamartoma preferentially affects men between the fifth and seventh decades of life [2,4]. Its endobronchial form, long regarded as an exceptional finding, is in fact reported in 3% to 20% of cases depending on the series, the largest published cohorts comprising 47 patients in Spain and 14 in Portugal [1,5,6]. Unlike the parenchymal form, which is frequently asymptomatic, the endobronchial form is usually symptomatic because of its obstructive nature — cough, hemoptysis, dyspnea, recurrent pneumonia, and distal bronchiectasis, as seen in our patient [1,2].

Radiologically, a typical hamartoma is a well-defined nodule under 4 cm, with the classic "popcorn" calcification pattern present in only 25% to 30% of cases [4,7]. CT allows a near-certain diagnosis when smooth margins, a size under 2.5 cm, and a typical fat or calcific component are present; in their absence, distinguishing the lesion from a malignant tumor becomes impossible without biopsy [4]. Our case was radiologically atypical: a large, ill-defined, necrotic mass with a suspicious adrenal nodule — a pattern strongly suggestive of metastatic bronchogenic carcinoma rather than a benign lesion.

The bourgeoning, cauliflower-like endoscopic appearance is likewise misleading and can be macroscopically indistinguishable from carcinoma [1]. This overlap with malignant features is not purely coincidental: several studies report an association between pulmonary hamartoma and an increased risk of associated, synchronous or metachronous bronchogenic cancer, with a relative risk reported to be as much as six-fold higher than in the general population in some series [2,8]. This association justifies prolonged surveillance after a benign diagnosis of hamartoma, particularly in smokers.

Definitive diagnosis rests on histology, which demonstrates mature mesenchymal tissue without cytonuclear atypia, covered by a normal respiratory epithelium [2,3] — findings present in our case, allowing malignancy to be confidently excluded despite a highly suspicious clinical and radiological context.

Management today is primarily endoscopic and conservative: observation alone when the lesion is asymptomatic, and endoscopic resection (snare, laser, or cryotherapy) for symptomatic obstruction, with surgery reserved for endoscopic failures, persistent diagnostic uncertainty, or irreversible parenchymal destruction [1,5].

CONCLUSION

Endobronchial hamartoma can convincingly mimic bronchogenic carcinoma in a smoker, both radiologically and endoscopically. Only histology can settle the diagnosis, which mandates a systematic biopsy of any suspicious endobronchial lesion before any radical therapeutic decision, together with prolonged follow-up given the reported association between hamartoma and bronchogenic cancer.

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