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(CASE REPORT)

Endobronchial hamartoma mimicking low-grade chondrosarcoma on biopsy: A diagnostic pitfall

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Abstract

Endobronchial cartilaginous tumors are rare and may pose a significant diagnostic challenge, particularly on limited biopsy material. The distinction between pulmonary hamartoma, chondroma, and low-grade chondrosarcoma relies largely on architectural features that are often not assessable in small samples. We report a case of an endobronchial lesion in which bronchoscopic biopsy fragments composed exclusively of mature hyaline cartilage raised the differential diagnosis of chondroma versus low-grade chondrosarcoma. Subsequent surgical resection revealed a well-circumscribed lesion composed of mature cartilage admixed with adipose tissue and entrapped bronchial epithelium, consistent with endobronchial hamartoma. This case highlights a classic diagnostic pitfall and underscores the limitations of biopsy in cartilaginous pulmonary tumors. Awareness of this entity is essential to avoid overdiagnosis and inappropriate aggressive management.

Keywords: Endobronchial hamartoma; Pulmonary hamartoma; Chondrosarcoma; Endobronchial biopsy; Cartilaginous tumor; Diagnostic pitfall.

1. Introduction

Endobronchial cartilaginous tumors are rare and include benign and malignant entities such as pulmonary hamartoma, chondroma, and low-grade chondrosarcoma [1,6]. Pulmonary hamartoma is the most common benign lung tumor, although endobronchial localization is uncommon [1,4,5]. Diagnosis may be challenging on limited biopsy material, where only cartilaginous tissue may be sampled, precluding evaluation of key architectural features [6,7]. This may lead to misinterpretation as a cartilaginous neoplasm, particularly low-grade chondrosarcoma [6,8].

We report a case illustrating this diagnostic pitfall and highlighting the limitations of biopsy in endobronchial cartilaginous lesions.

2. Case Report

A 50-year-old patient with no significant past medical history presented with a several-month history of persistent cough and progressive dyspnea. No hemoptysis or weight loss was reported.

Chest imaging revealed an endobronchial lesion causing partial obstruction of the bronchial lumen. Bronchoscopic evaluation confirmed a polypoid mass within the bronchus, responsible for luminal narrowing. Given the obstructive symptoms, bronchoscopic biopsies were performed.

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Histological examination of the bronchoscopic biopsy specimens revealed fragments composed exclusively of mature hyaline cartilage (Figure 1).

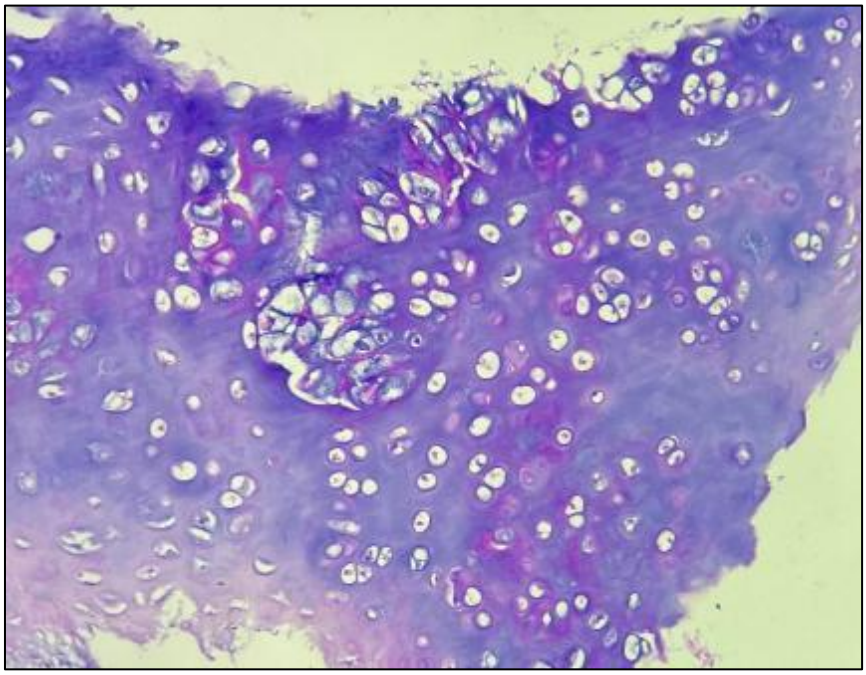

Figure 1 Bronchoscopic biopsy specimen showing fragments composed exclusively of mature hyaline cartilage (H&E, ×100).

The chondrocytes displayed mild cytological atypia, with slightly enlarged nuclei and occasional binucleation, without overt malignant features. Based on these findings, the lesion was interpreted as a cartilaginous neoplasm, raising the differential diagnosis of chondroma versus low-grade chondrosarcoma.

Given the diagnostic uncertainty and the obstructive nature of the lesion, surgical resection was performed. Macroscopically, the tumor appeared as a well-circumscribed polypoid endobronchial mass.

Histological examination of the resected specimen revealed a well-defined lesion composed of disorganized but mature hyaline cartilage admixed with adipose tissue and clefts lined by entrapped respiratory epithelium (Figure 2-3). No infiltrative growth pattern, significant cytological atypia, or destructive features were identified.

These findings were consistent with a diagnosis of endobronchial hamartoma

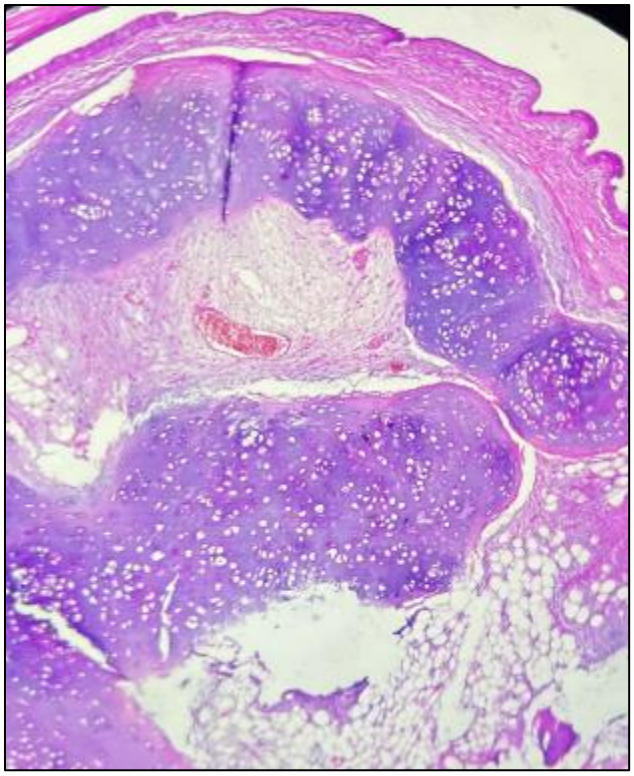

Figure 2 Surgical specimen showing a well-circumscribed lesion composed of disorganized mature cartilage admixed with adipose tissue and entrapped bronchial epithelium (H&E, ×100).

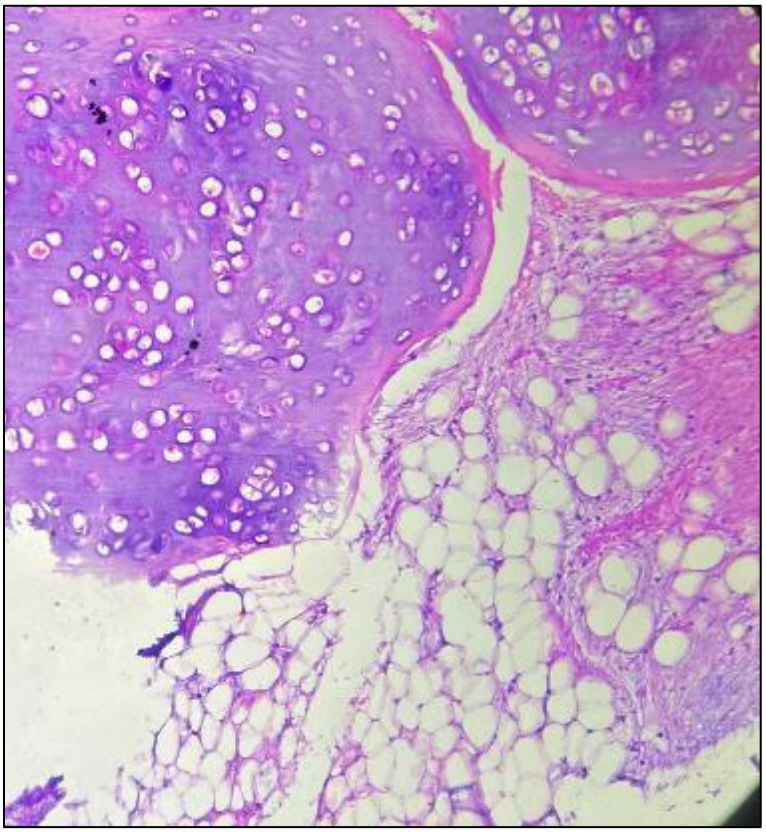

Figure 3 High-power view highlighting mature hyaline cartilage with adjacent adipose component, without significant cytological atypia (H&E, ×400).

3. Discussion

Endobronchial hamartomas are rare benign tumors representing a small subset of pulmonary hamartomas, which are the most common benign tumors of the lung [1,4]. They are typically composed of a disorganized admixture of mesenchymal elements, including cartilage, adipose tissue, and entrapped respiratory epithelium [1,4]. Although usually peripheral, endobronchial localization is uncommon and may lead to obstructive respiratory symptoms [5].

The diagnosis of endobronchial cartilaginous lesions is particularly challenging on limited biopsy material, where sampling may be restricted to mature cartilage alone. In this context, mild cytological atypia may lead to suspicion of a cartilaginous neoplasm [6].

The main differential diagnoses include pulmonary chondroma and low-grade chondrosarcoma. Their distinction relies primarily on assessment of growth pattern, lesion circumscription, and the presence of additional tissue components, which are often not evaluable in small biopsy specimens [7–9].

Low-grade chondrosarcoma typically shows infiltrative growth and variable cytological atypia, whereas endobronchial hamartoma is a well-circumscribed lesion lacking destructive features and demonstrating a characteristic admixture of tissue components on resection specimens [1,4,8].

Pulmonary chondroid tumors form a spectrum with overlapping histological features, further complicating the diagnostic approach [6,10]. This overlap highlights the importance of clinicopathological correlation.

This case underscores the risk of overdiagnosing malignancy on limited biopsy material in endobronchial cartilaginous lesions. When uncertainty persists, complete surgical excision remains essential for definitive diagnosis and appropriate management.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare no conflicts of interest.

Statement of ethical approval

Ethical approval was not required for this type of study according to institutional policy.

Statement of informed consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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