

Case Report

Primary colloid adenocarcinoma of lung: A case report and review of literature

Supriya Adiody¹ , MD, Vishnu Narayanan S¹ , MD, Namita Rachel Mathew¹, MBBS

¹Department of Respiratory Medicine, Jubilee Mission Medical College and Research Institute, Thrissur, Kerala, India.

ABSTRACT

Colloid adenocarcinoma of the lung is a rare subtype of invasive adenocarcinoma, marked by abundant extracellular mucin and scattered neoplastic cells. We present a case of a 54-year-old chronic smoker with occupational stone dust exposure, who reported progressive dyspnea, dry cough, weight loss, and chest pain. Imaging revealed a lobulated left lower lobe mass with mediastinal lymphadenopathy, vertebral lesions, and a hepatic nodule suggestive of metastasis. Bronchoscopy showed airway narrowing, and transbronchial biopsy demonstrated mucin-filled alveolar spaces with neoplastic and signet ring cells. Histopathology confirmed colloid adenocarcinoma, with CK7 positivity, CK20 focal positivity, and TTF-1 negativity on immunohistochemistry. Fine needle aspiration of a supraclavicular node confirmed metastasis. This case highlights the importance of recognizing this uncommon tumor to guide diagnosis and management.

Keywords: Adenocarcinoma, Colloid, Lung cancer, Mucin

INTRODUCTION

Colloid adenocarcinoma is a rare form of invasive lung cancer distinguished by the accumulation of extracellular mucin, which expands the alveolar spaces and damages the surrounding lung tissue. This uncommon variant accounts for approximately 0.24 percent of all lung cancer cases.^[1] The most frequently reported symptoms include cough, hemoptysis, and chest pain. However, some patients remain asymptomatic, with the condition often discovered during routine health examinations.

On computed tomography (CT) imaging, pulmonary colloid adenocarcinomas typically appear as lobulated tumors with homogeneous low attenuation. Histopathological analysis reveals abundant mucin distending the alveolar spaces, accompanied by the destruction of alveolar walls and lung parenchyma. Neoplastic mucinous columnar epithelial cells

partially line the alveolar walls and are seen floating within mucin-filled spaces. These pathological characteristics closely resemble those of cystadenocarcinomas observed in the ovary, breast, and pancreas.^[2-4] Patients with this tumor generally have a favorable prognosis, especially when complete surgical resection is achieved, and no metastasis is present.

Herein, we present a case of colloidal adenocarcinoma of the lung, which was picked up on bronchoscopic biopsy and fine needle aspiration cytology (FNAC) of the cervical lymph node.

CASE REPORT

In the first week of November 2024, a 54-year-old male, with no known comorbidities, presented to the Pulmonary Medicine outpatient department (OPD) of a tertiary care center in Central Kerala, with complaints of progressively

*Corresponding author: Supriya Adiody, Department of Respiratory Medicine, Jubilee Mission Medical College and Research Institute, Bishop Alappat Road, East Fort, Thrissur, 680005, Kerala, India. adiodysupriya337@gmail.com

Received: 15 May 2025 Accepted: 14 November 2025 Published: 23 January 2026 DOI: 10.25259/ASJO_40_2025

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, transform, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms. ©2026 Published by Scientific Scholar on behalf of Asian Journal of oncology

worsening shortness of breath and a dry cough of two months' duration. He also reported left-sided dull aching chest pain of two weeks' duration and fever for two days. These symptoms were associated with a significant loss of appetite and a five kg weight loss over two months.

The patient had a history of chronic smoking, consuming approximately 20 bidis per day for 25 years. His occupational history revealed that he worked as a manual laborer in a stone quarry for 15 years, but stopped this work five years ago. There was no past history of pulmonary tuberculosis (PTB), pneumonia, or other significant respiratory illnesses.

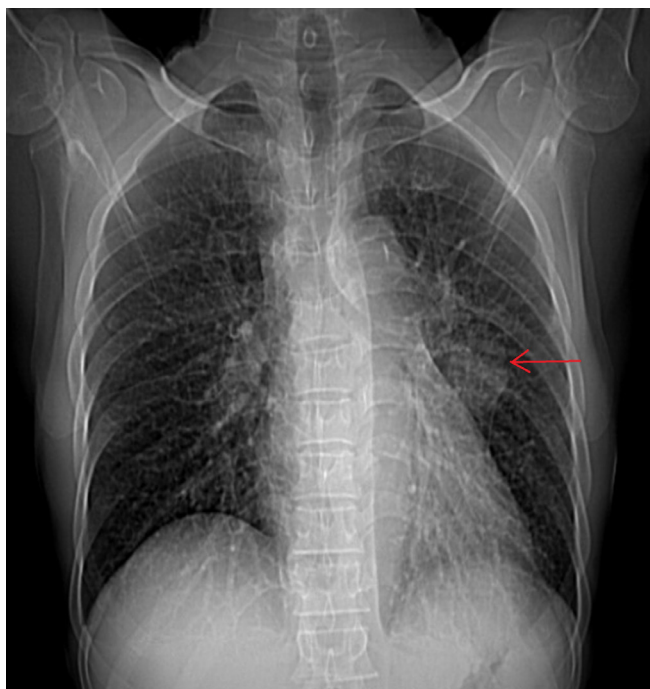


Figure 1: Chest X-ray showing non-homogeneous opacity in the left hilar region. The red arrow points towards the non-homogeneous opacity in the left hilar region.

On clinical evaluation, the patient's vital signs were stable, with a SpO₂ of 97 percent on room air. Physical examination revealed palpable, hard lymph nodes in the bilateral supraclavicular regions. Chest auscultation demonstrated decreased breath sounds on the left side, crepitations on the left, and bilateral rhonchi.

Routine blood investigations were within normal limits. A chest X-ray revealed non-homogeneous opacity in the left hilar region [Figure 1].

Subsequently, a contrast-enhanced computed tomography (CECT) of the chest was performed, which showed a minimally enhancing, lobulated, soft-tissue density mass lesion measuring 4.8 × 4.0 × 3.8 cm in the superior segment of the left lower lobe. The mass exhibited internal necrosis and caused an abrupt cut-off of sub-segmental bronchi. It extended to the left hilum, encasing the left interlobar pulmonary artery and its branches. Additionally, there were enlarged mediastinal lymph nodes with bilateral supraclavicular lymph nodes. Imaging identified focal sclerotic areas in the D1 and L1 vertebral bodies and an ill-defined enhancing lesion measuring 10 × 9 mm in the right lobe of the liver, suggestive of metastatic deposits [Figure 2].

To further evaluate the left hilar mass, a flexible bronchoscopy (FOB) was performed, revealing mucosal irregularity and narrowing of the airway in the left lower lobe bronchus [Figure 3].

A transbronchial lung biopsy (TBLB) was taken from the abnormal focus and sent for histopathological examination (HPE). HPE revealed a respiratory epithelium lined with infiltrating neoplastic cells arranged in a glandular pattern with abundant signet ring cells. The glands were lined with mucin-laden cuboidal cells showing mild to moderate nuclear pleomorphism, hyperchromatic indented nuclei, and abundant mucinous cytoplasm. Occasional mitotic

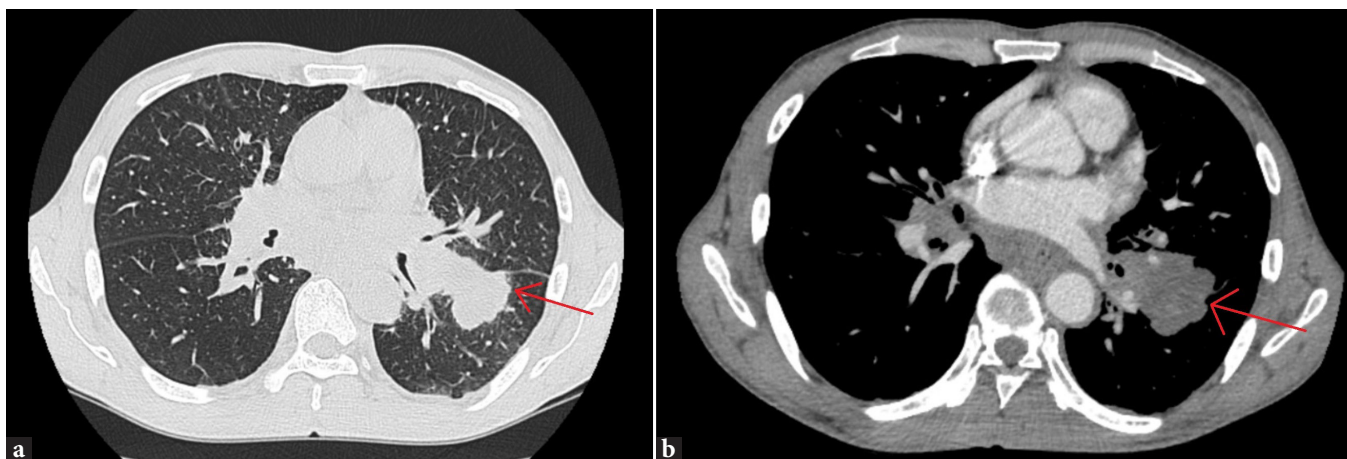


Figure 2: contrast-enhanced computed tomography (CECT) chest images showing lobulated, minimally enhancing, soft-tissue density mass lesions a) Lung window b) Mediastinal window.

figures were observed. The stroma showed extracellular mucin deposition and desmoplasia [Figure 4]. These findings were consistent with colloid adenocarcinoma of the lung,

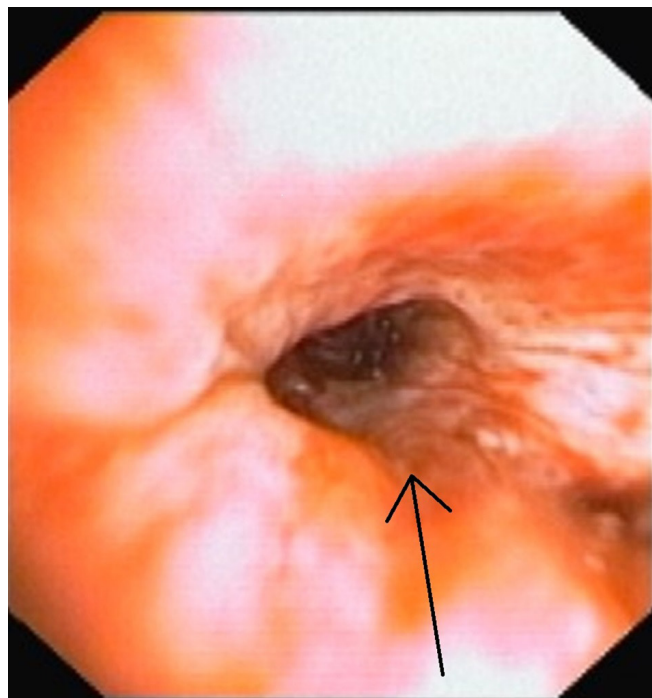


Figure 3: Flexible bronchoscopy image showing mucosal irregularity and narrowing of the airway in the left lower lobe bronchus.

a rare morphological variant of lung adenocarcinoma characterized by mucin pools containing well-differentiated adenocarcinoma cells. Further analysis using immunohistochemistry (IHC) marker study demonstrated CK7 diffuse strong positivity, CK20 focal positivity, and tTTF-1 negativity. FNAC of the cervical lymph node was also consistent with metastatic colloid adenocarcinoma.

Based on the clinical, radiological, and histopathological findings, a diagnosis of primary colloid adenocarcinoma of the lung was established. The patient was subsequently referred to the oncology department for further management, including staging workup and treatment planning.

DISCUSSION

Colloid adenocarcinoma is a rare form of invasive lung cancer distinguished by the accumulation of extracellular mucin, which expands the alveolar spaces and damages the surrounding lung tissue. This uncommon variant accounts for approximately 0.24 percent of all lung cancer cases. [1] The most frequently reported symptoms include cough, hemoptysis, and chest pain. However, some patients remain asymptomatic, with the condition often discovered during routine health examinations.

On CT imaging, pulmonary colloid adenocarcinomas typically appear as lobulated tumors with homogeneous low

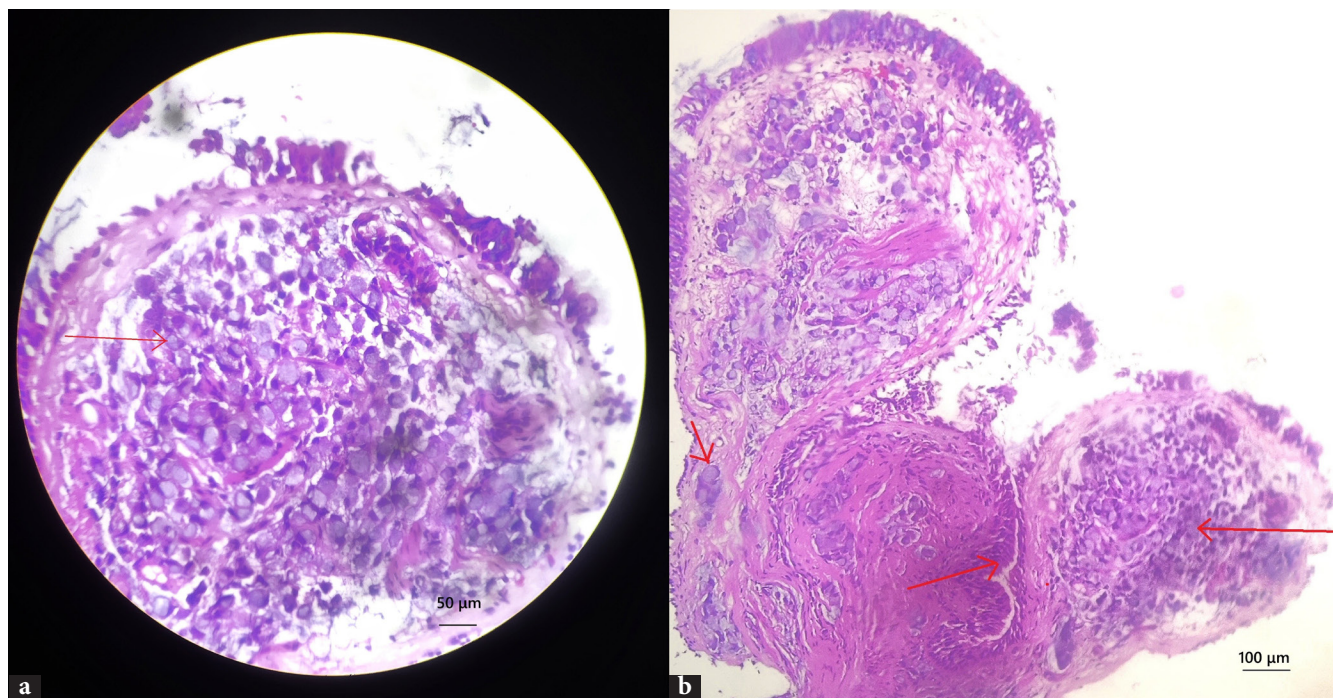


Figure 4: Hematoxylin and eosin staining sections of lung biopsy specimen showing: a) Respiratory epithelium lined with infiltrating neoplastic cells arranged in a glandular pattern [magnification 10x], the red arrow points towards abundant signet ring cell containing mucinous cytoplasm. b) Abundant signet ring cell containing mucinous cytoplasm and stroma with mucin deposition [magnification 40x], the red arrows points towards respiratory epithelium lined with infiltrating neoplastic cells arranged in a glandular pattern.

attenuation. Histopathological analysis reveals abundant mucin distending the alveolar spaces, accompanied by the destruction of alveolar walls and lung parenchyma. Neoplastic mucinous columnar epithelial cells partially line the alveolar walls and are seen floating within mucin-filled spaces. These pathological characteristics closely resemble those of cystadenocarcinomas observed in the ovary, breast, and pancreas.^[2,3]

According to the World Health Organization (WHO) classification of tumors, colloid adenocarcinoma of the lung is a subtype of adenocarcinoma characterized by abundant mucin pools replacing the air spaces. The tumor cells generally exhibit minimal mitotic activity and lack necrosis. Immunohistochemical staining typically shows strong positivity for CK7. The diagnosis is established through tissue biopsy, which may be obtained via TBLB, video-assisted thoroscopic surgery (VATS)-guided biopsy, or from resected specimens. In our case, FNAC of the supraclavicular lymph node and TBLB confirmed the diagnosis, and an IHC marker study showed strong positivity for CK7.

The immunoprofile of colloid adenocarcinoma is known to overlap with that of enteric adenocarcinoma or metastatic mucinous adenocarcinoma originating from the gastrointestinal tract.^[4] However, our patient showed no abdominal symptoms, and a CT scan of the abdomen was normal, effectively ruling out metastatic mucinous adenocarcinoma from the gastrointestinal tract. Based on the presence of abundant extracellular mucin pools and sparse tumor cells, we propose that these are characteristic histological features of colloid adenocarcinoma.

If the tumor is localized, recurrence rates may be relatively low, even in cases where the tumor is large. Patients with this tumor generally have a favorable prognosis, especially when complete surgical resection is achieved, and no metastasis is present. According to Russell *et al.*, the estimated five-year survival rate for nine patients with colloid adenocarcinoma of the lung who underwent surgical resection was 51 percent, which is higher compared to other subtypes.^[5]

Due to the rarity of the tumor, long-term prognostic data are limited. The treatment approach for colloid adenocarcinoma should follow the established guidelines for primary lung cancer. Lobectomy or segmentectomy with lymph node dissection is regarded as the preferred treatment option for colloid adenocarcinoma.

CONCLUSION

Colloid adenocarcinoma of the lung is a rare mucin-rich tumor that can resemble other mucinous malignancies, making careful histopathological evaluation essential. This

case emphasizes the value of integrating clinical, radiologic, and bronchoscopic findings to achieve an accurate diagnosis. Early recognition of this uncommon entity supports timely treatment planning and may improve overall outcomes.

Author contributions: SA, VNS, NRM: All authors meet the criteria for authorship and have made substantial contributions to the manuscript. Specifically, both authors were involved in the concept and design of the study, acquisition and interpretation of data, and preparation of the manuscript. Both authors critically reviewed the content for intellectual merit and approved the final version of the manuscript for publication.

Ethical approval: Institutional Review Board approval is not required.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship: Nil

Conflicts of interest: There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation: The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript, and no images were manipulated using AI.

REFERENCES

- Rossi G, Murer B, Cavazza A, Losi L, Natali P, Marchioni A, *et al.* Primary mucinous (so-called colloid) carcinomas of the lung: A clinicopathologic and immunohistochemical study with special reference to CDX-2 homeobox gene and MUC2 expression. *Am J Surg Pathol* 2004;28:442–452.
- Gao ZH, Urbanski SJ. The spectrum of pulmonary mucinous cystic neoplasia: A clinicopathologic and immunohistochemical study of ten cases and review of the literature. *Am J Clin Pathol* 2005;124:62–70.
- Gaeta M, Blandino A, Scribano E, Ascenti G, Minutoli F, Pandolfo I. Mucinous cystadenocarcinoma of the lung: CT-pathologic correlation in three cases. *J Comput Assist Tomogr* 1999;23:641–643.
- Zenali MJ, Weissferdt A, Solis LM, Ali S, Tang X, Mehran RJ, *et al.* An update on clinicopathological, immunohistochemical, and molecular profiles of colloid carcinoma of the lung. *Hum Pathol* 2015;46:836–842.
- Russell PA, Wainer Z, Wright GM, Daniels M, Conron M, Williams RA. Does lung adenocarcinoma subtype predict patient survival? A clinicopathologic study based on the new International Association for the Study of Lung Cancer/American Thoracic Society/European Respiratory Society international multidisciplinary lung adenocarcinoma classification. *J Thorac Oncol* 2011;6:1496–1504.

How to cite this article: Adiody S, Narayanan S V, Mathew NR. Primary colloid adenocarcinoma of lung: A case report and review of literature. *Asian J Oncol.* 2026;12:2. doi: 10.25259/ASJO_40_2025