

Assessing the Utility of Bronchoscopy in Patients With Haemoptysis and Normal CT Imaging

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INTRODUCTION

Haemoptysis is a common reason for referral to Rapid Access Lung Clinics. It has a multitude of aetiologies, ranging from malignancy, infection, or psuedohaemoptysis.

Diagnostic approach for haemoptysis includes chest radiograph (CXR), computed tomography (CT) scan, and flexible bronchoscopy (1). CXR has relatively poor sensitivity for detecting lung malignancy (2), CT imaging has sensitivity as high as 97% (3). Diagnostic rates in bronchoscopy for central lesions has a sensitivity of 88%, but this is greatly reduced for peripheral lesions (4).

This study assesses the rates of malignancy detection by bronchoscopy in patients presenting with haemoptysis and normal CT imaging in a Model 4 Irish Hospital.

METHODS

We conducted a retrospective cohort study of consecutive patients undergoing bronchoscopy for haemoptysis at University Hospital Waterford, Ireland, between January and December 2024.

Data collected includes patient demographics, haemoptysis characteristics, bronchoscopy outcomes, malignancy risk factors, medical and medication history, and subsequent CT imaging. Patients were excluded if the bronchoscopy was performed for indications other than haemoptysis, or if CT findings were suspicious for malignancy or identified an alternative cause of haemoptysis.

RESULTS

- **38 patients** met inclusion criteria from 321 assessed.
- Patients were predominantly **male (61%)**, with a mean age of **58 ± 12.9 years**.
- **76% had a smoking history** (26% current, 50% ex-smokers).
- **97.4% (37/38) had no endobronchial abnormality** on bronchoscopy.
- **One endobronchial malignancy** was identified; retrospective CT review at MDM demonstrated an abnormality.
- **No new lung malignancies** were identified on subsequent CT imaging in the 21.1% who underwent repeat imaging.
- Overall, **bronchoscopy had a very low diagnostic yield following a normal CT chest**.

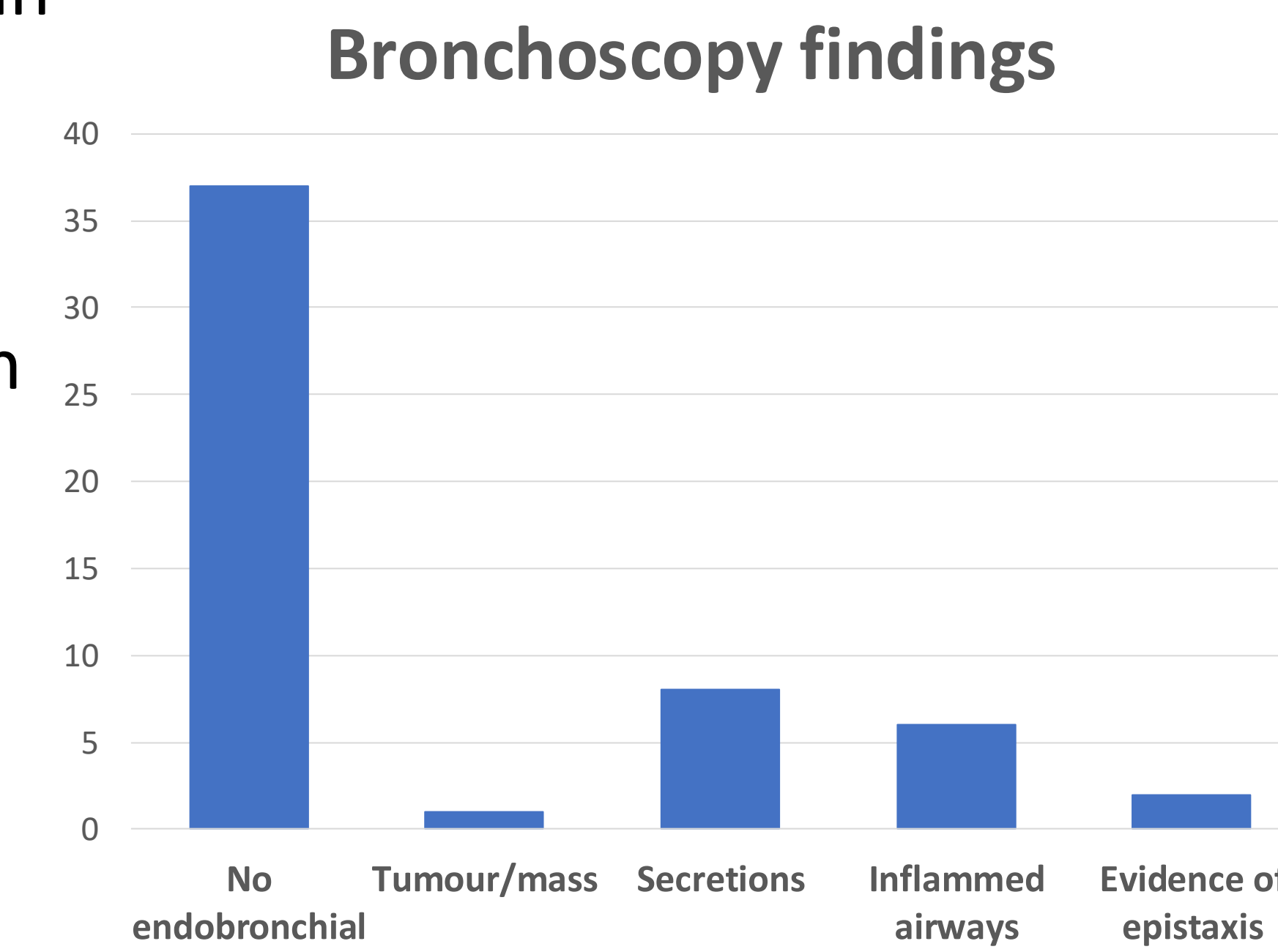


Figure1. Results of bronchoscopy

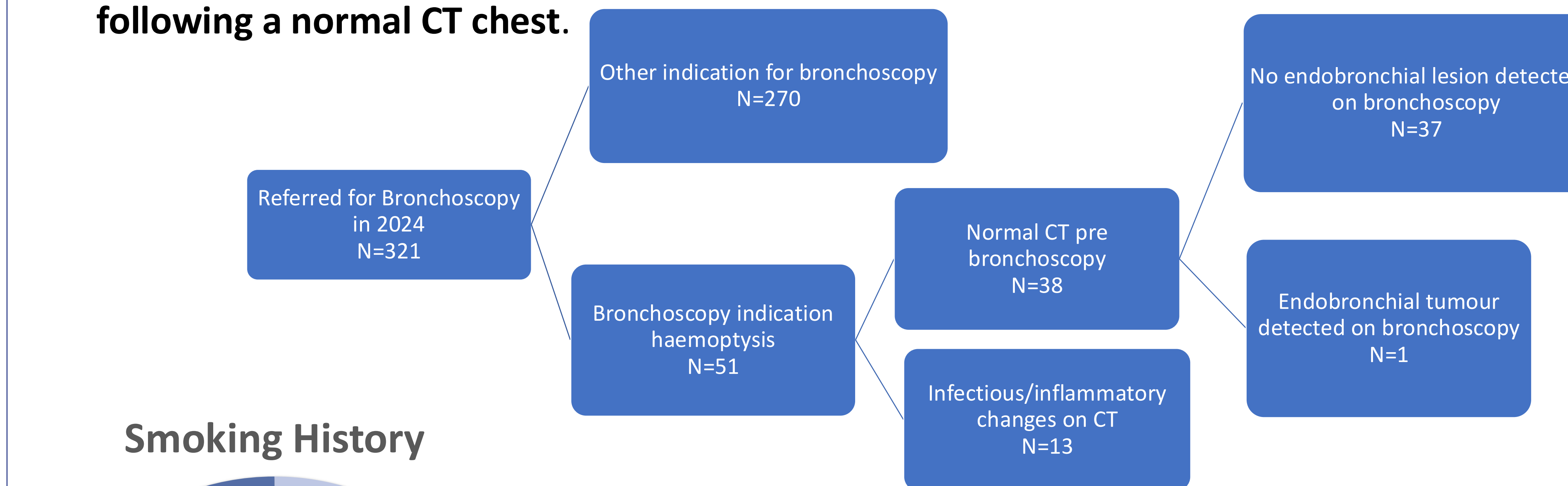


Figure2. Screening of bronchoscopy patients

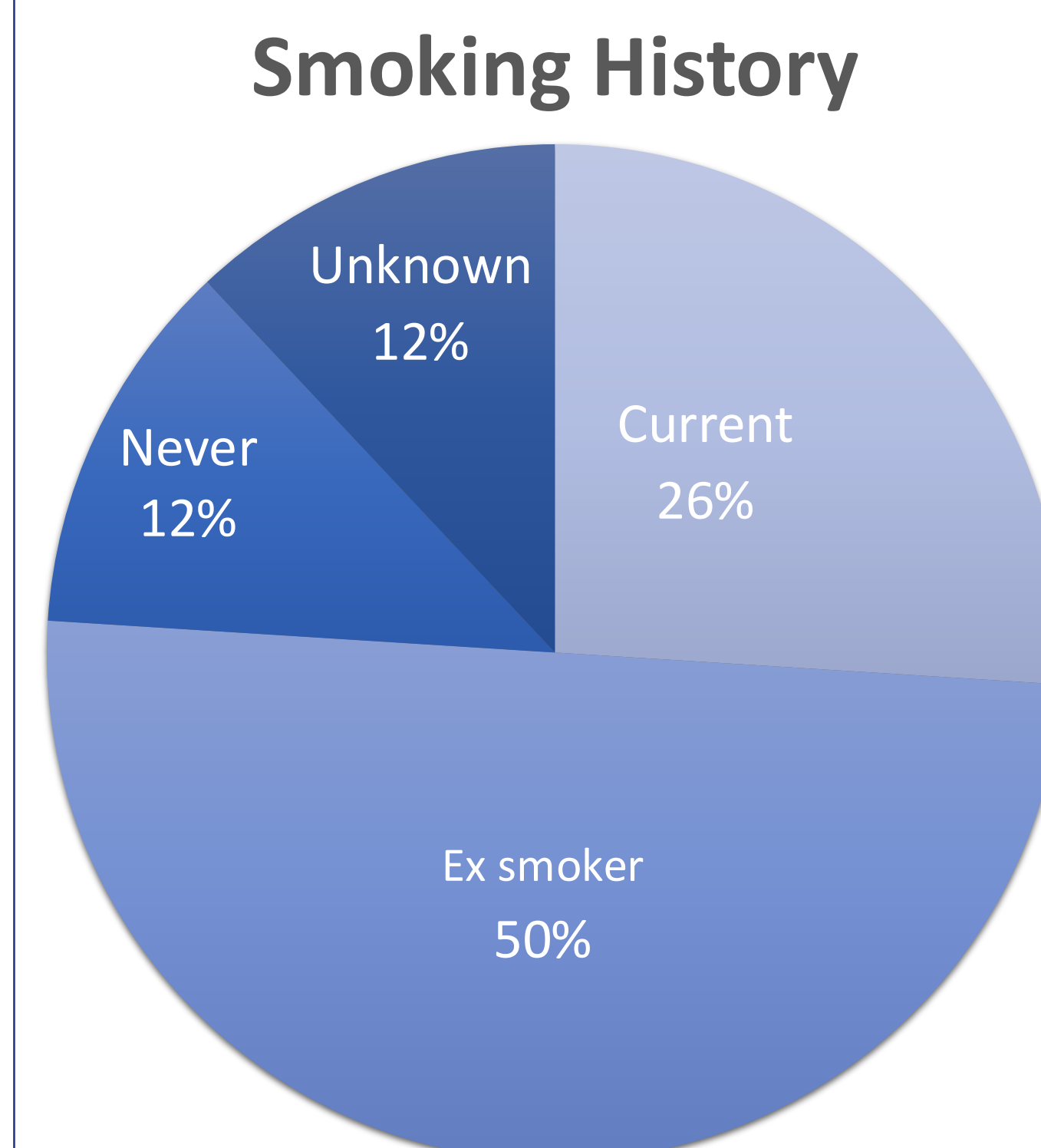


Figure3. Smoking history of participants

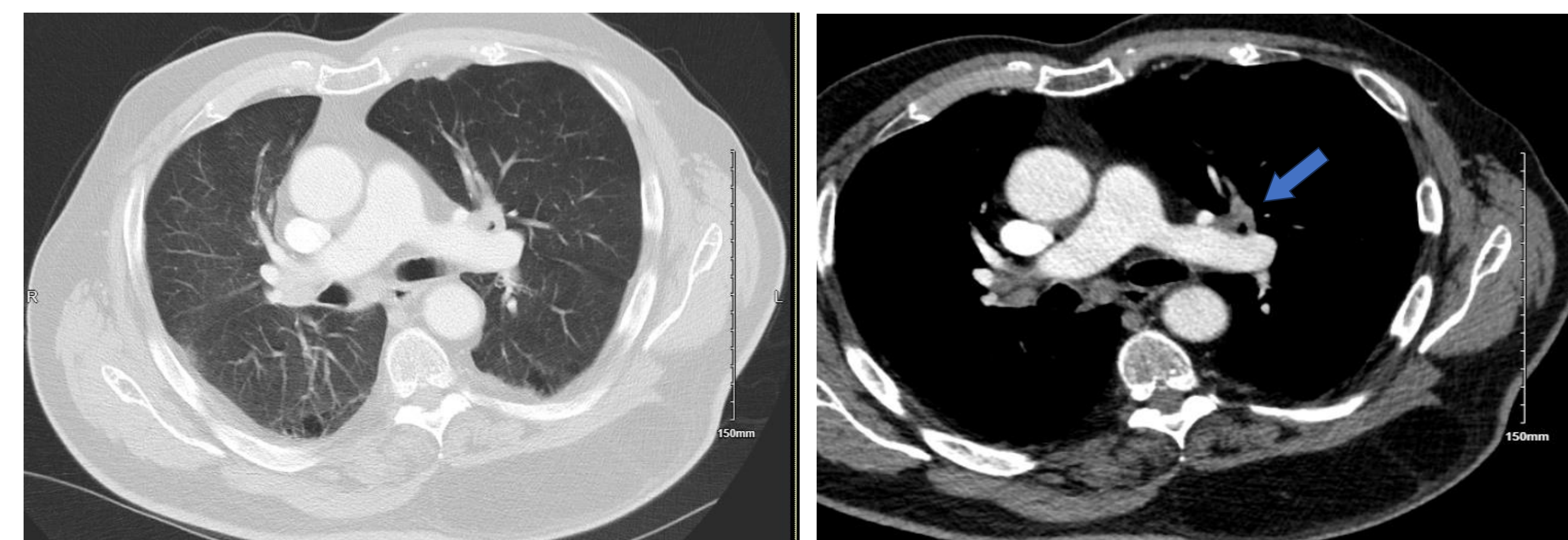


Figure4. Retrospective CT review demonstrating circumferential soft tissue thickening at the left upper lobe bronchus, corresponding to an endobronchial tumour identified at bronchoscopy.

DISCUSSION AND CONCLUSION

Take Away Message

- Bronchoscopy provides very low sensitivity for diagnosing primary lung malignancy in patients presenting with haemoptysis and normal CT imaging.

Future Direction for Research

- Our findings support CT as a sufficient first-line investigation in this population and question the routine use of bronchoscopy in the absence of radiologic abnormalities.
- Careful multidisciplinary review of imaging remains essential to avoid missed diagnoses.

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