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BRONCHOSCOPIC RETRIEVAL OF AN ASPIRATED NAIL IN AN ADULT: A RARE MIMICKER OF PULMONARY NEOPLASM

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Abstract:
Foreign body aspiration (FBA) is an uncommon clinical occurrence in adults and often presents with nonspecific respiratory symptoms, making diagnosis challenging. This case describes a 55-year-old male with a history of chronic smoking and alcohol use who presented with persistent cough, hemoptysis, and breathlessness. Initial imaging suggested a possible lung neoplasm due to a soft-tissue lesion in the right middle lobe. However, flexible bronchoscopy revealed a nail embedded in granulation tissue within the bronchial tree. The foreign body was successfully retrieved, and histopathological examination confirmed benign inflammatory changes without evidence of malignancy. The patient experienced complete clinical recovery following the procedure. This case highlights the importance of maintaining a high index of suspicion for foreign body aspiration in adults presenting with unexplained respiratory symptoms, especially when conventional diagnostics suggest malignancy. Early bronchoscopy not only facilitates diagnosis but also offers immediate therapeutic intervention.

Keywords: Foreign body aspiration, Bronchoscopy, Pulmonary lesion, Nail aspiration, Adult airway obstruction

INTRODUCTION

Foreign body aspiration (FBA) is a clinical condition most commonly associated with children; however, it can occur in adults under specific circumstances. In adults, FBA accounts for a minority of airway obstruction cases and is frequently underrecognized due to vague symptoms, lack of a witnessed event, and overlap with other pulmonary conditions such as chronic bronchitis, bronchiectasis, or lung cancer. The clinical presentation is often subtle and chronic, especially when the foreign body does not produce immediate respiratory distress, and this can lead to diagnostic delays or misdiagnoses such as infections or malignancies [1].

Adults may aspirate foreign bodies in the context of neurological impairment, alcohol intoxication, or altered sensorium, all of which impair protective airway reflexes. Unlike in children, where the event is usually acutely symptomatic, in adults, the symptoms may persist for weeks or even months and include chronic cough, hemoptysis, wheezing, or recurrent pneumonia [2]. Imaging findings may be non-specific and, in some cases, mimic malignancy, further complicating the diagnostic process [3]. This case report describes a rare instance of an aspirated nail in a 55-year-old male that mimicked a neoplastic lesion, highlighting the importance of high clinical suspicion and the crucial role of bronchoscopy in diagnosis and management.

Case Report

A 55-year-old male presented to the pulmonary outpatient clinic with complaints of a persistent dry cough, exertional breathlessness (mMRC Grade 2), and intermittent wheezing, all of which had been ongoing for the past three months. In the preceding two days, he had experienced multiple episodes of hemoptysis, with each episode producing 3-4 mL of fresh blood. He also reported a low-grade fever and no history of chest pain, paroxysmal nocturnal dyspnea, orthopnea, leg swelling, or decreased urine output.

The patient was a known hypertensive on regular antihypertensive therapy and had a 20 year history of smoking. On probing further into his social and occupational history, he revealed that around the onset of his symptoms, he had consumed alcohol excessively during a social gathering. Following that event, he had a vague recollection of a possible aspiration of nail but had not sought immediate medical attention. He did not experience acute respiratory symptoms at the time and attributed his ongoing symptoms to his smoking history.

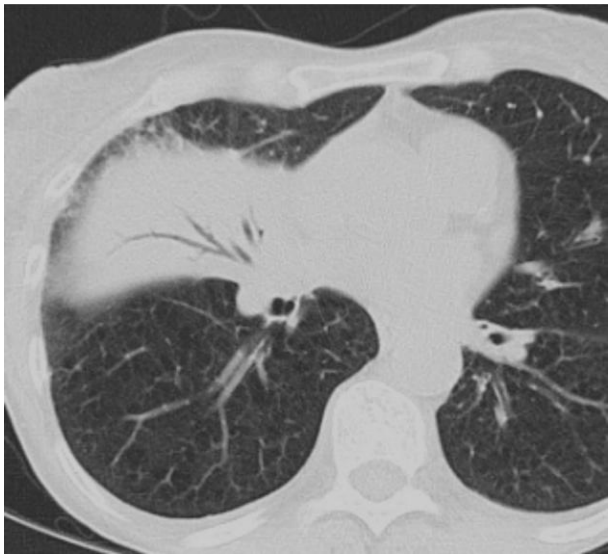

Figure 1: HRCT Showing Soft-tissue Dense Lesion in the Right Middle Lobe with an associated Bronchial Cutoff

Physical examination revealed mild wheezing on auscultation of the right lower chest. Routine blood investigations were within normal limits. A chest X-ray showed non-homogeneous opacities in the right middle and lower lung zones, suggestive of a possible infective or neoplastic etiology. Further evaluation with high-resolution computed tomography (HRCT) (Figure 1) of the chest revealed a soft-tissue dense lesion in the right middle lobe with an associated bronchial cutoff, raising strong suspicion of a bronchogenic carcinoma, particularly in view of the patient's age and smoking status.

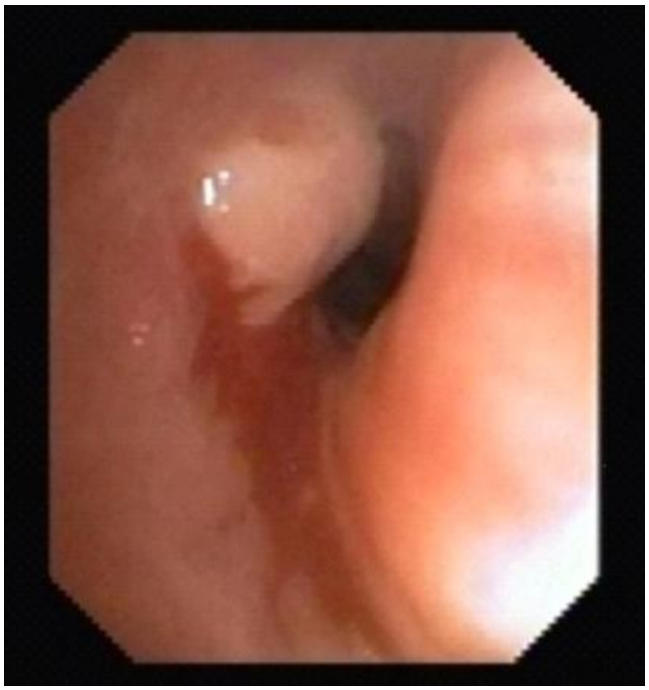

Figure 2: Bronchoscopic view of right middle lobe showing inflamed mucosa with granulation tissue obstructing the right middle lobe bronchial orifice

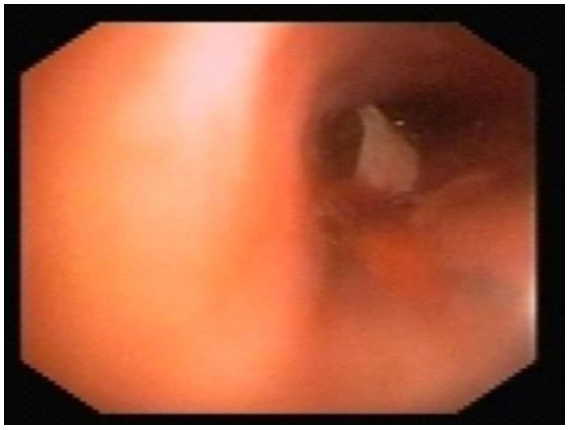

Figure 3: Bronchoscopic view of right middle lobe showing foreign body resembling a nail embedded within the granulation tissue

To further investigate the etiology of the lesion, the patient underwent flexible fiberoptic bronchoscopy under local anesthesia and conscious sedation. Bronchoscopy revealed the presence of inflamed mucosa with granulation tissue obstructing the right middle lobe bronchial orifice (Figure 2). Careful manipulation uncovered a sharp, foreign body resembling a nail embedded within the granulation tissue (Figure 3). Using biopsy forceps, the foreign body was successfully extracted without any procedural complications. Multiple punch biopsies were also obtained from the adjacent tissue for histopathological analysis.

Figure 4: Gross Specimen of Nail

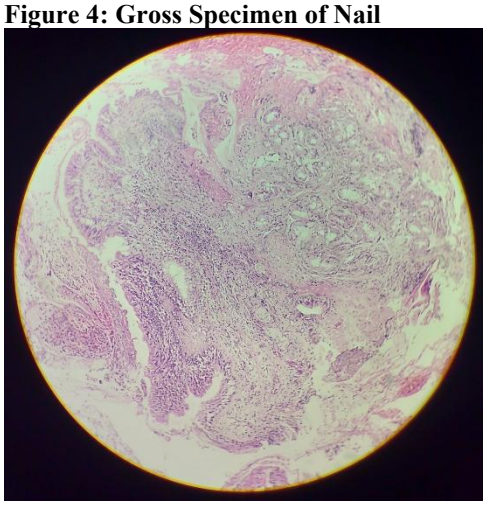

Figure 5: Histological sections showed respiratory epithelium with squamous metaplasia and extensive granulation tissue infiltrated by neutrophils, lymphoid aggregates, and hemosiderin-laden macrophages, H & E stain, magnification ×10

Gross examination (Figure 4) of the tissue revealed multiple gray-brown soft fragments. Histopathological analysis (Figure 5) showed respiratory epithelium with squamous metaplasia and extensive granulation tissue infiltrated by neutrophils, lymphoid aggregates, and hemosiderin-laden macrophages. Focal areas revealed

multinucleated giant cells indicative of a chronic foreign body reaction. No evidence of malignancy or granulomatous inflammation was identified. The extracted object was confirmed to be a toe nail.
A follow-up bronchoscopy performed one week later showed significant resolution of the bronchial obstruction, although mild granulation tissue persisted. Repeat biopsy confirmed the absence of malignant changes. Clinically, the patient reported marked improvement in symptoms, including resolution of hemoptysis and dyspnea. He was discharged with instructions for outpatient follow-up and was scheduled for bronchial balloon dilation in subsequent visits to manage residual stenosis.

DISCUSSION

Foreign body aspiration in adults remains a diagnostic challenge. In contrast to pediatric patients, adult cases are often missed due to an atypical presentation, lack of an acute choking event, and overlapping symptoms with common pulmonary diseases. The spectrum of presenting symptoms may include chronic cough, unexplained hemoptysis, wheezing refractory to bronchodilators, or recurrent respiratory infections [4]. Smoking history and older age can mislead clinicians into suspecting malignancy, especially when imaging reveals mass-like opacities or bronchial cutoff.
In this case, the aspirated nail had remained in the bronchial tree for several weeks, triggering a local inflammatory response with granulation tissue and squamous metaplasia. These findings could easily be mistaken for neoplastic changes both radiologically and endoscopically [5]. Bronchoscopy was crucial in establishing the correct diagnosis and avoiding unnecessary oncological treatment. Histopathology further corroborated the presence of a foreign body-induced inflammatory response without neoplasia.
Multiple studies have emphasized the role of flexible bronchoscopy as a first-line diagnostic and therapeutic tool in suspected foreign body aspiration in adults [2,3]. It offers direct visualization of the airway, identification of the foreign body, and the opportunity for immediate retrieval. The presence of granulation tissue and secondary infection can sometimes obscure the foreign body, necessitating a high degree of procedural expertise.
This case underscores the need for a thorough clinical history that includes inquiry into occupational hazards, intoxication, and possible aspiration events. Imaging alone, particularly may not reliably differentiate between neoplasm and benign obstructive lesions. Hence, clinicians should maintain a high index of suspicion and proceed to bronchoscopy when imaging and clinical findings are incongruent.

CONCLUSION

This case report highlights a rare but important differential diagnosis of chronic respiratory symptoms in adults foreign body aspiration. The presence of an aspirated nail masquerading as a lung mass underscores the limitations of relying solely on imaging in high-risk patients. Prompt bronchoscopy enabled definitive diagnosis and successful intervention. Clinicians should maintain vigilance for aspiration events, particularly in patients with risk factors such as alcohol abuse, and consider bronchoscopy early in the diagnostic process for unexplained pulmonary symptoms.

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