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Case Report
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Pulmonary Pulse Granuloma Mimicking Malignancy: A Rare Case Presentation

Lauren McGrath[1,*] and Kumar P[2]

[1] *6 Bachelor of Medicine Bachelor of Surgery ; JCU, Australia*
[2]*FRACP, Respiratory Physician, Mackay Base Hospital, Queensland Health, Australia*

[*]**Corresponding author:** Kumar P, Mackay Base Hospital, 475, Bridge Road, Mackay, Queensland, Australia

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Abstract

Pulse granulomas (hyaline ring granulomas) are unusual granulomatous lesions most frequently observed in the oral cavity, yet they have also been described in the lungs, stomach, and intestines [1-3]. Histologically, they are characterized by distinctive hyaline rings surrounded by multinucleated giant cells [1,2]. Two main theories attempt to explain their pathogenesis: an exogenous origin from foreign plant materials (e.g., legumes) and an endogenous origin due to vascular changes [4,9]. However, most reports favour the concept that implanted or aspirated cellulose-based material initiates these lesions [1,5,8]. We describe a rare case of pulmonary pulse granuloma initially mistaken for malignancy. This highlights the importance of accurate recognition to avoid unnecessary invasive interventions.

Keywords: Pulse granulomas; Oral cavity; Lungs; Stomach

Introduction

Pulse granuloma, also referred to as hyaline ring granuloma (PG/HRG), has been recognized for at least eight decades [4]. While it is most commonly encountered in the oral cavity [1,5], pulmonary presentations often through aspiration have also been documented [2,3,6,7]. Gastrointestinal involvement, typically associated with ulceration or perforation, has likewise been reported [9,10]. Although its etiology was once debated, it is now largely accepted that PG/HRG represents a foreign-body reaction to cellulose-based plant material [1,5,8]. Pulmonary pulse granulomas are relatively uncommon but can mimic more serious pathologies such as malignancies on imaging.

Case Report

A 65-year-old male was referred to the respiratory outpatient clinic after a computed tomography (CT) scan of the chest showed an irregular, triangular area of solid opacification in the apical segment of the left lower lobe, accompanied by subtle airspace opacification. This imaging had been performed due to a three-month history of productive cough (clear-to-green sputum), progressive fatigue, exertional dyspnea, and decreased exercise tolerance. The patient denied hemoptysis, fevers, weight loss, vomiting, diarrhea, and abdominal pain. He also had no significant history of asthma, atopy, smoking, or recent overseas travel.

Medical History and Medications

- Type 2 Diabetes Mellitus (T2DM): managed with metformin.
- **Other medications**: celecoxib (Celebrex), desvenlafaxine (Pristiq), and pregabalin (Lyrica).
- **Occupational history**: past mining exposure.
- **Family history**: maternal breast cancer, T2DM, hypertension; no known family history of lung cancer**.**

Initial treatment by the patient's general practitioner focused on presumed community-acquired pneumonia, leading to courses of oral amoxicillin, doxycycline, and clarithromycin. While symptoms improved transiently, they soon recurred.

Radiological Findings

Repeat CT of the chest demonstrated a 20 mm solid, triangular lesion in the superior segment of the left lower lobe, with a surrounding 30 × 40 mm region suggestive of bronchial spread

and partial collapse near the hilum. Subtle lymphadenopathy was noted in the left posterior hilar region, along with scarring in the right middle lung zone. PCR analyses for Chlamydia pneumoniae, Legionella pneumophila, and Mycoplasma pneumoniae were negative (Figures 1-6).

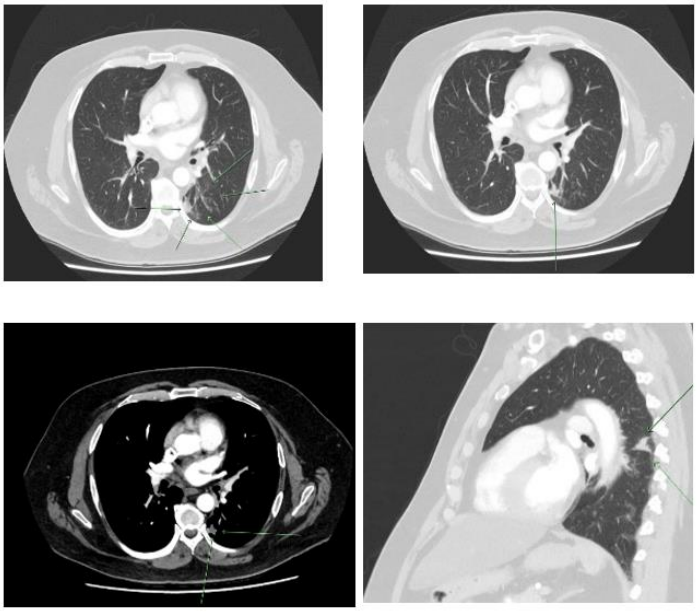

Figure 1: *CT scan findings showing a triangular solid opacification in the apical segment of the left lower lobe.*

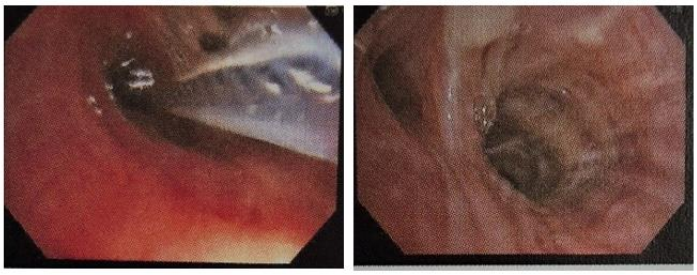

Figure 2*: Bronchoscopy images of left lower lobe.*

Clinical Examination

- **Vital signs**: afebrile; respiratory rate 22 breaths/min; heart rate 88 beats/min; oxygen saturation 100% on room air.
- **General status**: GCS 15, no respiratory distress or cyanosis.
- **Lymph nodes**: no palpable lymphadenopathy.
- **Respiratory exam**: reduced air entry in the right middle lobe; normal vesicular breath sounds elsewhere.
- **Systemic exam**: unremarkable.

Despite partial and transient symptom improvement with antibiotics, the lesion persisted on imaging. Broncho alveolar carcinoma was a leading differential diagnosis, and bronchoscopy with biopsy was arranged.

Diagnostic Bronchoscopy

Bronchoscopy with Broncho alveolar lavage (BAL) of the left lower lobe (superior segment) was performed. The lavage fluid was blood-tinged and sent for cell count, bacterial culture, viral testing, and acid-fast bacilli (AFB) analysis. Brushings and biopsy specimens were also collected.

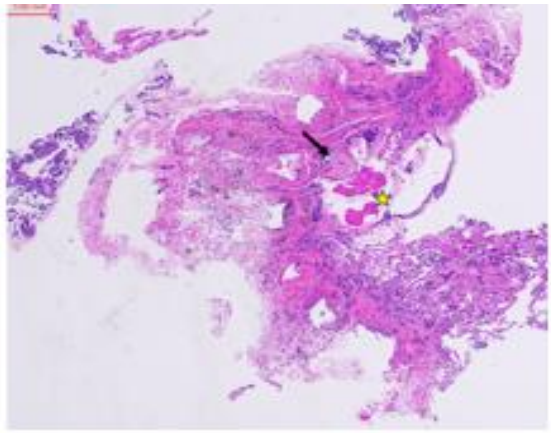

Figure 3*: Left Lower Lobe Lung biopsy at 40x magnification with degenerate food particle (arrow) and adjacent fibrin (star).*

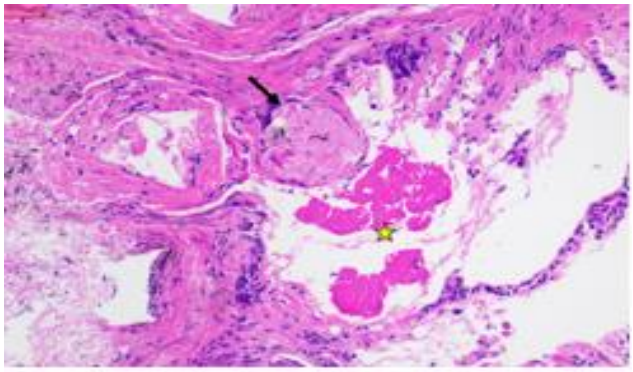

Figure 4*: Left Lower Lobe Lung biopsy at 100x magnification with degenerate food particle (arrow) and adjacent fibrin (star).*

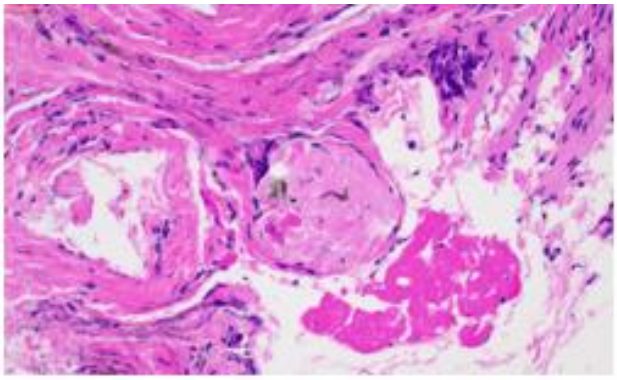

Figure 5*: Left Lower Lobe Lung biopsy at 200x magnification of degenerate food particle.*

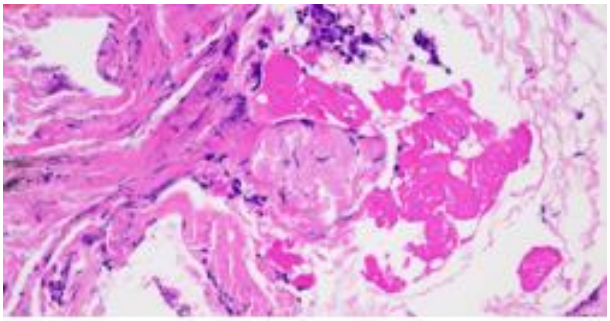

Figure 6: *Left Lower Lobe Lung biopsy at 200x magnification of degenerate food particle*

Histopathological Findings

Microscopic examination of the biopsy revealed granulomatous inflammation surrounding hyaline ring structures. Within these rings, degenerative food particles consistent with plant or legume matter were observed, confirming the diagnosis of a pulmonary pulse granuloma.

Discussion

Granulomatous lesions in the lung can arise from a spectrum of causes including infections, connective tissue diseases, and foreign-body reactions [2,3,6]. Pulse granulomas characteristically show hyaline rings surrounded by multinucleated giant cells, often containing discernible vegetable matter [1,2]. When such lesions occur in the lungs, they commonly reflect aspiration of plant material [2,3,7]. Radiologically, pulmonary pulse granulomas can mimic neoplasms or other mass-like pathologies [7]. Hence, histopathological examination is essential to establish a benign etiology and avert potentially unnecessary surgical interventions.

Conclusion

Pulmonary pulse granulomas are rare and can be mistaken for malignancies. A high index of suspicion for this benign lesion is critical in patients who present with non-resolving pulmonary opacities, especially when typical infectious etiologies have been excluded. Early identification of pulse granuloma can prevent undue anxiety and procedures aimed at ruling out malignancies.

References

1. Freedman PD, Lumerman H. Hyaline ring granuloma (pulse granuloma) of the alveolar ridge: a clinicopathologic study of six new cases. Oral Surg Oral Med Oral Pathol. 1979; 47: 227-232.
2. Flaxman NA, Freilich MM. Pulse granulomas in the lung. Arch Pathol Lab Med. 1977; 101: 84-86.
3. Sheppard MN. Pulmonary hyaline ring granulomas: an unusual form of lung reaction to aspirated vegetable matter. Histopathology. 1983; 7: 139-145.
4. Kramer IR, Lucas RB, Pindborg JJ. A benign lesion of the oral mucosa (“giant-cell hyaline angiopathy” or “pulse granuloma”). Br Dent J. 1971; 131: 128-30.
5. Santos M, Freitas J, Azevedo A, Alves M, Dias L. Pulse granuloma in the alveolar ridge. J Clin Exp Dent. 2019; 11: e806-9.
6. Zarbo RJ, Lloyd RV, Bacchi CE. Pulmonary pulse granuloma: histopathologic recognition and pathogenesis of an unusual foreign body reaction. Arch Pathol Lab Med. 1986; 110: 857-861.
7. Wang H, Liao W, Wu X, Xu J, Deng L. Pulmonary pulse granuloma presenting as a solitary lung nodule: a case report and review of the literature. Diagn Pathol. 2012; 7: 45.
8. Regezi JA, Sciubba JJ, Jordan RC. Oral Pathology: Clinical Pathologic Correlations. 7th ed. St. Louis: Saunders; 2016.
9. Ackerman LV, Rosai J. Ackerman’s Surgical Pathology. 8th ed. St. Louis: Mosby; 1996.
10. Neville BW, Damm DD, Chi AC, Allen CM. Oral and Maxillofacial Pathology. 4th ed. St. Louis: Elsevier; 2016.

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