A lung mass: Not the usual suspect, but not above suspicion

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ABSTRACT

Lipoid pneumonia is an entity that is not commonly thought of when faced with opacities on the chest radiograph. The radiological changes of lipoid pneumonia can mimic pneumonia or malignancy. Due to this mimicry, it is commonly missed and alternative diagnoses should always be considered and ruled out when suspecting lipoid pneumonia. Although majority of lipoid pneumonias occur due to exogenous ingestion of oil, endogenous factors such as bronchial obstruction and pulmonary alveolar proteinosis can also result in this condition. The emphasis of this case is on the approach to and treatment of lipoid pneumonia, including its association with malignancy.

1. Case report

A 54-year-old male, who was an active smoker of 36 pack-years, presented with pleuritic right-sided chest pain for 5 days. He also suffered from a cough, productive of white sputum for the past month, and had visited a general practitioner who prescribed a course of antibiotics. However, his symptoms persisted. There was no fever, breathlessness, night sweats or constitutional symptoms. He had a past medical history significant for metabolic syndrome and ischemic heart disease. Physical examination was non-contributory. Chest radiograph revealed a 3.6cm spiculated mass lesion in the right lower zone suspicious for malignancy. Further history at this point was negative for e-cigarette use, aspiration episodes, traditional medicine use or inhalation of oil-based products.

2. Discussion

Lipoid pneumonia was first described in 1925 after the inhalation of nasopharyngeal oil droplets[1]. It is characterised by an inflammatory reaction to the lipid derivatives that get trapped in the alveoli and it is usually classified as either exogenous or endogenous depending on the source of the lipids. The exact prevalence and incidence is unknown as most patients tend to be asymptomatic but autopsy series have reported the incidence as being 1%–2.5%[2]. Those that do present with symptoms tend to have non-specific complaints as seen in our patient. The main risk factor for developing lipoid pneumonia is the ingestion or inhalation of oil-based products. An interval computed tomography of the chest repeated in 3 months from the initial scan, demonstrated near-complete resolution of the mass and decrease in size of the mediastinal nodes (Fig. 1D). The risk factor exposure and improvement in imaging with supportive therapy is highly suggestive of exogenous lipoid pneumonia which was our patient’s eventual diagnosis. The patient underwent smoking cessation treatment, and was offered lung cancer screening with year low-dose CT starting at age 55 years to which he agreed. The patient also agreed to start smoking cessation treatment.
vaping where two out the three patients who underwent broncho-alveolar lavage were found to have lipid-laden macrophages confirming the diagnosis of lipoid pneumonia[5]. Common imaging findings in lipoid pneumonia include alveolar consolidation and ground-glass attenuation with superimposed inter-lobular septal thickening which closely resemble changes seen in lung cancer[4,5]. The inflammatory reaction may result in lymphadenopathy further adding to the diagnostic conundrum and difficulty in differentiating these conditions. Moreover, lung cancer causing bronchial obstruction may in itself lead to lipoid pneumonia, which may mask the diagnosis of cancer and lead to diagnostic delay. It has also been postulated that tumour breakdown products such as mucin may lead to an inflammatory reaction presenting as lipoid pneumonia even in the absence of endobronchial obstruction[6]. Malignant transformation of localized areas of exogenous lipoid pneumonia has been reported even in patients with clear-cut history of chronic intake of an oil-based substance and

![Fig. 1. Images of lipoid pneumonia.](image)

A. Chest radiograph at presentation showing a right lower zone opacity.
B. Interval chest radiograph showing decrease in the size of the opacity.
C. Computed tomography showing a lung mass with central low attenuation and adjacent interstitial thickening and ground glass changes.
D. Interval computed tomography showing significant decrease in the size of the lung mass.
E. Focal interstitial aggregate of lipid laden histiocytes.
F. Lung parenchyma showing intra-alveolar foamy histiocytes.
histologically-proven lipoid pneumonia[7]. Interval imaging to evaluate evolution over time may therefore be indicated even when lipoid pneumonia is histologically documented to ensure that the diagnosis of malignancy is not missed. To our knowledge, there are no existing guidelines regarding the surveillance of lipoid pneumonia. Our patient met criteria for lung cancer screening with yearly low-dose CT thorax, which will allow the opportunity to monitor for development of lung cancer in a high-risk patient, whether or not related to his established diagnosis of lipoid pneumonia. In conclusion, clinicians should be aware of the close association and difficulty in differentiating between lipoid pneumonia and lung cancer to avoid potential diagnostic pitfalls.

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Key points

1. Lipoid pneumonia can present in a non-specific manner, mimicking patterns seen in infection and malignancy.

2. As malignancy in itself can cause lipoid pneumonia, it is therefore prudent to always consider this as a differential.

3. Interval imaging to evaluate evaluation of lipoid pneumonia is important to ensure alternative diagnoses are not missed.

Declaration of competing interest

The authors declare that they have no known competing interests or personal relationships that could have appeared to influence the work reported in this paper.

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