



## A Case of Lipid Pneumonia Similar to Lung Cancer in $^{18}\text{F}$ -FDG PET/CT

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### Short Communication

Lipid pneumonia can be divided into exogenous and endogenous accounting sources. Exogenous is caused by inhalation of vegetable, animal or mineral oils. In the same lesion, early inflammation and late fibrosis can exist at the same time. Infants and aging patients are prone to aspiration pneumonia. Endogenous, also known as cholesterol pneumonia, is a complication of lung cancer, bronchiectasis or secondary scleroderma. It can also occur in fat embolism, alveolar proteinosis and lipid involvement. The PET scan may be “positive” as a result of metabolic activity of inflammation. Physicians should consider lipid pneumonia in the differential diagnosis of a PET-positive lung lesion to avoid unnecessary surgery.

A 50 year old male patient underwent chest CT examination due to rheumatoid arthritis treatment. He found ground glass nodules in the upper lobe of the right lung, lobulated and burr can be seen at the edge, without chest pain, cough and expectoration. There were no abnormalities in tumor markers. The focus did not change after anti-inflammatory treatment for more than 10 days. Clinically suspected malignancy, PET/CT was performed to help clarify the nature of the nodule and evaluate the general situation. PET/CT showed that the metabolic activity of the nodule was increased, nuclear physicians consider malignancy and there was no obvious abnormal metabolic activity increase in the rest of the body. After wedge resection, pathology showed that lipid pneumonia, which was a rare inflammation in clinic, had similar imaging findings with primary lung cancer. Lipids can be endogenous or exogenous [1,2]. Exogenous substances are mostly inhaled mineral oil, vegetable oil, animal oil, etc. The etiology and pathogenesis of endogenous lipid pneumonia are not completely clear. It can be primary without obvious inducement. It may also be related to chronic lung inflammation, pulmonary tuberculosis, pulmonary abscess, lung tumor, parasite, fibrosis, after chest radiotherapy, dust stimulation and heavy smoking. The imaging manifestations can be ground glass, nodules and masses. The fat density in the nodules is helpful to distinguish, and the paving stone sign is also a more specific manifestation.

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Received Date: 11 Feb 2022

Accepted Date: 01 Mar 2022

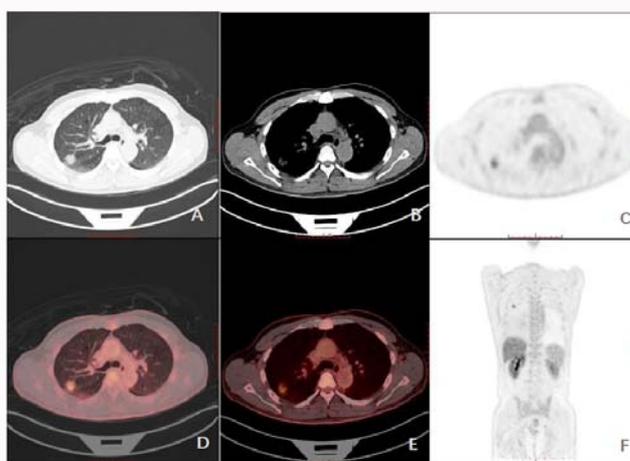
Published Date: 14 Mar 2022

#### Citation:

Peng Z, Yan C, Zhiming Y. A Case of Lipid Pneumonia Similar to Lung Cancer in  $^{18}\text{F}$ -FDG PET/CT. *Ann Clin Case Rep.* 2022; 7: 2139.

ISSN: 2474-1655

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**Figure 1:** A 50-year-old male suffered from rheumatoid arthritis for more than 20 years. CT images in the lung window (A) can see a nodular shadow, the boundary is unclear, and burrs can be seen at the edge, increased metabolic activity confirming the presence of ongoing inflammation (D). Soft tissue window (B) showed low density in nodules, metabolic activity is also uptake (E). Axial position (C) and Coronal position (E) in PET.

After further questioning the medical history, the patient had a history of oil inhalation 8 years ago, but had not inhaled oil again for several years before the operation, and there was no nodule on chest CT in 2012, which is considered to be irrelevant to this disease. In addition, the patient diagnosed asthma for more than 4 years and intermittently inhaled hormone drugs, which is also considered to be irrelevant to this case; on the imaging findings, the fat density components can be seen in the mediastinal window, and the nodule boundary is not clear, which is different from that of lung cancer [3,4]. The advantage of PET/CT is to reflect the metabolic activity of nodules, but due to poor specificity, false positives are easy to occur patients with lipid pneumonia may have local inflammatory reaction and increased metabolic activity [5]. The judgment of benign and malignant nodules should be combined with more imaging features. In addition, whole-body imaging can provide a basis for clinical staging. The patient's clinical medication history can also be used as the identification point. Most of the existing literature reports have a history of mineral oil inhalation.

In conclusion, for atypical lipid pneumonia, the fat density in the nodule [1] and clinical medication history can assist [6] in the diagnosis. When it is difficult to distinguish between lipid pneumonia and malignant lesions on the image, puncture or surgery should be actively performed to determine the nature of the lesions [7,8] (Figure 1).

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