Lipoid pneumonia (ECR 2014 Case of the Day)
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Section: Chest imaging
Area of Interest: Lung
Procedure: Diagnostic procedure
Imaging Technique: Conventional radiography
Special Focus: Inflammation
Case Type: Clinical Cases
Authors: L. Flors, V. Navarro Aguilar, P. Calvillo
Patient: 76 years, male

Clinical History:
A 76-year-old man was referred to our hospital for fever, cough, and pain in the right side of the chest. He had a history of laryngeal carcinoma and laryngectomy with residual facial nerve paralysis, dysphagia and dysphonia.

Imaging Findings:
Chest radiograph performed on admission (Fig. 1) shows multiple airspace consolidations with mass-like appearance within the right lung. The patient received antibiotic treatment with favourable clinical response. Chest radiograph performed before discharge (Fig. 2) demonstrated minimal improvement of the right basal consolidation, the rest of the lesions remaining unchanged.

Based on these findings, a contrast-enhanced thoracic CT was performed (Fig. 3). It shows a mass-like consolidation with spiculated margins in the posterior segment of the right upper lobe (RUL), and smaller consolidations with similar characteristics and peribronchovascular distribution in the right middle (RML) and right lower (RLL) lobes. Mild architectural distortion within the posterior segment of the RUL and the RML is also seen.
Small airways disease with tree-in-bud pattern is also present in the RLL. Areas of very low-attenuation – fat attenuation within the consolidations are depicted on the mediastinal window. Middle oesophagus dilatation is also seen.

Discussion:
Lipoid pneumonia is an infrequent disorder, with an estimated incidence of 1-2.5% [1]. It results from accumulation of lipids in the alveoli, and depending on the source of the lipids, there are two types: exogenous – inhalation or aspiration of animal fat, mineral or vegetable oil – and endogenous –secondary to bronchial obstruction, chronic pulmonary infection, alveolar proteinosis, or diseases that led to abnormal fat deposition such as Niemann-Pick or Gaucher [1, 2]. Exogenous lipid pneumonia was first described in 1925 [1]. It is usually related to chronic use of oil-based laxatives and nasal drops [1], and it has also been described on fire-eaters, and patients with history of long-term use of lubricants and decongestants such as Vaseline, Vicks Vapor-Rub and lip gloss [1].

Clinical presentation can be acute or chronic. Acute presentation is uncommon and patients present with cough, dyspnoea and low-grade fever [1, 2]. If chronic, patients are usually asymptomatic [1, 3], but they may suffer chronic cough and dyspnoea [1, 3]. Predisposing factors to aspiration – such as elderly or young age, or neuromuscular or oesophageal disorders – are frequent [4]. Thorough investigation is important to achieve the appropriate diagnosis because predisposing factors and history of oil exposure are often missed.

In the proper clinical context, imaging findings can be diagnostic. In acute setting, findings appear within the first 30 minutes and present as ground-glass opacities or consolidations on CT. They usually are segmental or lobar in
distribution, and affect the RML and lower lobes [1]. Chronic disease shows irregular mass-like lesions with characteristic fat attenuation [4]. They can be single or multiple with peri-bronchovascular distribution and lower lobe predominance. Interlobular septal thickening, crazy “paving” pattern, and fibrotic changes can also be seen [4]. The presence of fat is an important diagnostic feature of chronic exogenous lipoid pneumonia. In the acute setting, fat attenuation material within the consolidations can also be seen, but inflammatory changes usually occult its presence [1].

Hamartomas are other fat-containing lesions of the chest. They are the most frequent benign pulmonary neoplasm [4] and, besides the presence of fat, popcorn calcifications are characteristic. The diagnosis is often determined from the clinical and imaging features, and long-term stability [4], and biopsy is required in atypical cases [1]. Discontinuation of the causative agent is the main treatment [3]. Antibiotics, corticoids and bronchoalveolar lavage can also be used [2]. Surgery is reserved for atypical cases.

**Differential Diagnosis List:** Lipoid pneumonia (chronic exogenous lipoid pneumonia), Primary pulmonary lymphoma, Lepidic predominant adenocarcinoma (former bronchioalveolar carcinoma), Sarcoidosis, Lipoid pneumonia, Chronic eosinophilic pneumonia

**Final Diagnosis:** Lipoid pneumonia (chronic exogenous lipoid pneumonia)

**References:**


Description: Chest radiograph performed on admission shows multiple airspace consolidations with mass-like appearance within the right lung. Origin: Department of Radiology Hospital Universitario y Politecnico la Fe Valencia/ES
Figure 2

Description: Chest radiograph performed before discharge demonstrates minimal improvement of the right basal consolidation, the rest of the lesions remaining unchanged. Origin: Department of Radiology Hospital Universitario y Politecnico la Fe Valencia/ES
Figure 3

Description: Contrast-enhanced CT shows mass-like consolidations within the right lung with internal areas of fat attenuation (depicted on the mediastinal window, right). Origin: Department of Radiology Hospital Universitario y Politecnico la Fe Valencia/ES