**CASOS CLÍNICOS** CASE REPORTS

# LUNG NECROSIS AFTER PARAFFIN ASPIRATION

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## Abstract

***Background:*** *Fire breather´s lung is a rare condition that occurs after hydrocarbon aspiration. Case reports published experienced a good clinical outcome with conservative treatment. To our knowledge, there are no reported cases treated with pulmonary resection.*

***Case presentation:*** *We report the case of a 35-year-old female trapeze artist, who suffered an accidental ingestion/aspiration of liquid paraffin. Persistent fever and elevated inflammatory markers without clinical improvement with antibiotics and bronchoscopy was seen. Computed tomography scan showing middle lobe necrosis and abscess motivated a middle lobectomy for infection control. Postoperative recovery was uneventful.*

***Conclusion:*** *There are some cases described in the literature, normally with a favourable evolution with conservative treatment. Therefore, it is important to acknowledge that, in patients where serious complications have arisen, despite medical therapy, surgery may have an important role, and resection of the necrotic lung may prevent its potential life-threatening consequences.*

## BACKGROUND

Exogenous lipoid pneumonia usually occurs when oils are aspirated or inhaled.[2] Liquid paraffin is a tasteless hydrocarbon, poorly absorbed from the gastrointestinal tract, and innocuous when ingested. However, paraffin depresses the protective cough reflex and mucociliary transport due to its high viscosity, and consequently aspiration is a potential risk.[1,4] It is a cheap product, and because it has a high explosive point (90ºC) it is commonly used by fire breathers,[4] making them a population at risk.

Aspiration pneumonitis is the most common complication of hydrocarbon ingestion (40%). Lung abscess is an extremely rare complication, only a few cases described in the literature, and most report effective treatment with antibiotics alone. Some cases evolving to pneumatocele formation.[3,6]

When aspiration of paraffin occurs, presentation ranges from asymptomatic patient to respiratory distress. Abnormalities seen in computed tomography (CT) scan vary from focal to bilateral, and the most common findings are alveolar consolidation and ground glass opacities, typically involving the middle and lower lobes.[1,2] Radiologic findings may appear 30 minutes after aspiration, although lung opacities will only be evident approximately within 24 hours.[2]

Clinical history, bronchoscopy with bronchoalveolar lavage – which shows fat globules on the fluid surface and the cytologic demonstration of lipid-laden macrophages – and CT scan combined, can establish the diagnosis.

## CASE PRESENTATION

We report the case of a 35-year-old female trapeze artist, who suffered an accidental ingestion/aspiration of liquid paraffin. Patient presented with nausea, vomiting, cough and pleuritic pain, associated with elevated inflammatory markers. Chest x-ray showed heterogeneous hypotransparency on the right hemithorax (figure 1). Treatment with intravenous amoxicillin-clavulanic acid was started. Initial chest CT scan revealed middle lobe consolidation

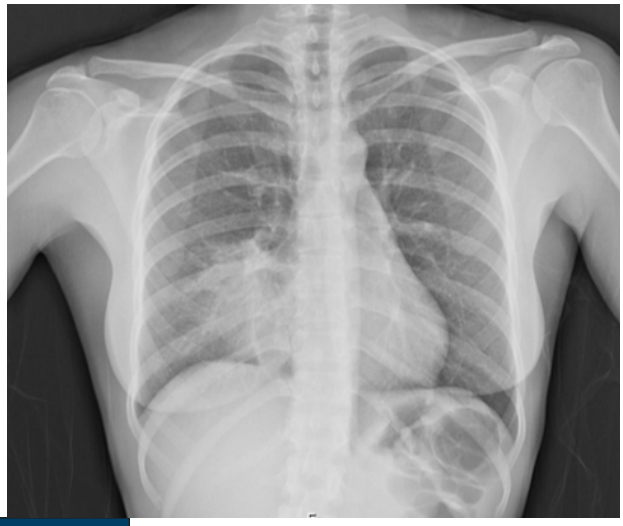

**Figure 1** *Chest x-ray showing heterogeneous hypotransparency on the right hemithorax.*

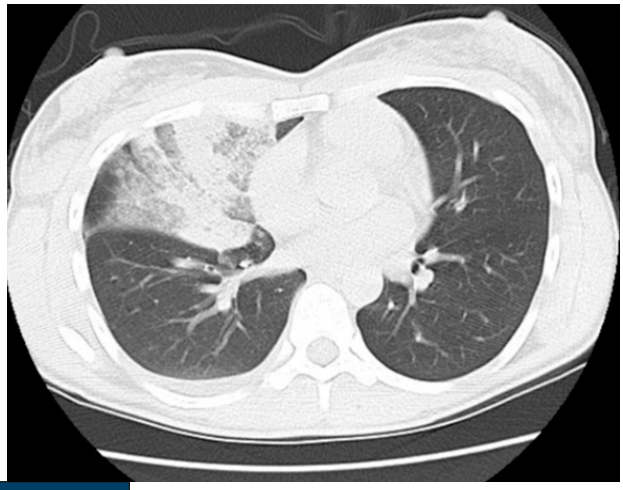

**Figure 2** *Chest CT scan revealing middle lobe consolidation.*

**Figure 3** *Chest CT scan showing middle lobe necrosis.*

(figure 2). A diagnostic bronchoscopy was performed and the findings included extensive edema and erythema around the bronchus intermedius, middle and right lower lobe bronchus, with drainage of milky fluid from the middle lobe. Bronchoalveolar lavage showed some alveolar macrophages. Cultural studies were negative.

Clinical deterioration was observed on day 4, with elevation of leucocytosis (80.000 leukocytes/$\mu$l), C-reactive protein as high as 350 mg/L, and fever. A revaluation CT scan showed middle lobe necrosis and abscess (figure 3). At this moment, surgery was considered, and a middle lobectomy was performed for infection control. During surgery, a clear destruction of the middle lobe (figure 4), with an important consolidation of the right lower lobe was noted. The decision was to spare the lower lobe, since there was not a clear destruction. Antibiotics were adjusted to Piperacilin-Tazobactan, and respiratory rehabilitation was intensified. The patient experienced a good recovery and a progressive improvement of the lower lobe consolidation was observed. Patient was discharged on the 9$^{th}$ post-operative day.

## DISCUSSION

There are few case reports in the literature of paraffin-induced exogenous lipoid pneumonia in fire breathers, though a good clinical outcome with conservative treatment is described in the majority of cases, including the ones which evolved to lung abscess.[3,4,5,7]

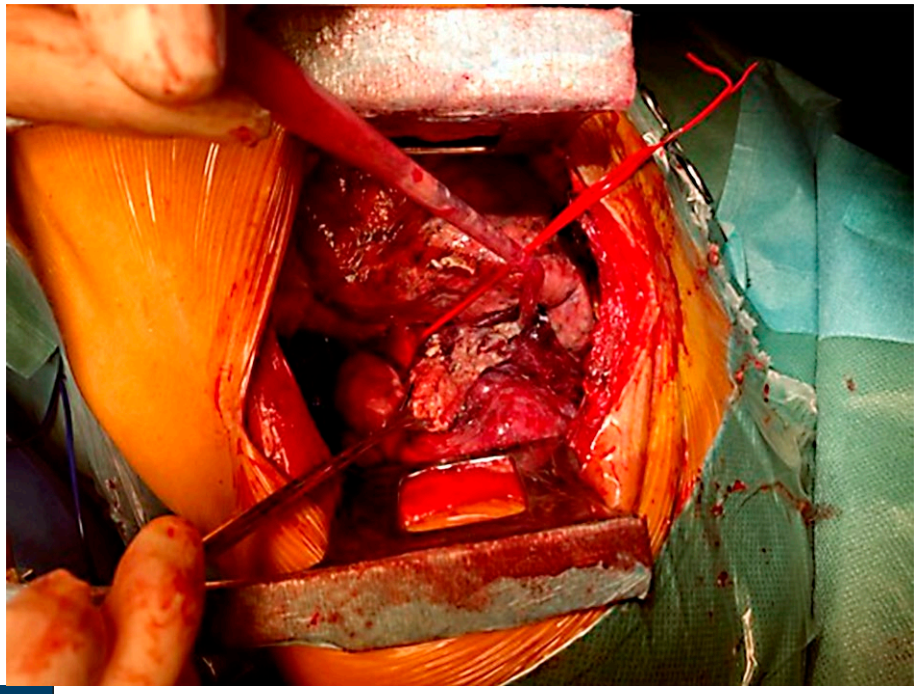

**Figure 4** *Intraoperative image of middle lobe destruction.*

In our case, the patient has a history of paraffin ingestion associated with subsequent vomit and cough, the same symptoms described in the literature, underlying a potential aspiration. Clinical deterioration with antibiotics and supportive therapy is rare in lipoid pneumonia,[2,6,7] but when it happens other treatment options should be considered. Necrosis of middle lobe could potentially cause a severe infection and the standard treatment is the removal of the necrotic lung.

To the best of our knowledge, this is the first case reporting a fire breather´s lung with need for lung resection due to necrosis. Therefore, we considered important to share our experience, and describe the role of Thoracic Surgery on the treatment of such severe complications.

## CONCLUSION

There are some cases of liquid paraffin aspiration described in the literature, and it is important to acknowledge the fact that, in some extremely rare cases, antibiotics will not be enough and surgical resection may be needed. Obstructive pneumonia with lung necrosis is a complication of liquid paraffin aspiration and immediate bronchoscopy should be performed. When necessary, resection of the necrotic lung may prevent its potential life-threatening consequences.

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