CASE REPORT

Exogenous lipid pneumonia caused by paraffin in an amateur fire breather

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Background
Paraffin has characteristics that make it popular among fire breathers.

Aims
To describe a case of paraffin-induced lipid pneumonia in a fire breather.

Methods
The patient was evaluated clinically in relation to his occupational history.

Results
A 32-year-old man presented with dyspnoea, tachypnoea and non-productive cough of 2 h duration that started immediately following an attempt to blow fire using paraffin as the volatile substance. He was discharged from the emergency ward but returned the next day presenting again with dyspnoea accompanied by mid-sternal pain, fever (38.1°C) and leucocytosis. Chest radiography showed perihilar punctate infiltrations. A diagnosis of exogenous lipid pneumonia caused by paraffin was made, and the patient was treated, with full recovery within a week.

Conclusions
Fire breathers must be viewed as a population at risk of paraffin-induced lipid pneumonia.

Key words
Exogenous lipid pneumonia; fire breather; occupational risk; paraffin; hydrocarbon solvents.

Introduction

Lipoid pneumonia caused by paraffin inhalation has been described previously. Most reports have been in children treated with liquid paraffin (also known as mineral oil or liquid petrolatum) for constipation [1–3]. Pharmaceutical liquid paraffin is tasteless and indigestible with low viscosity and relatively low volatility [2]. These characteristics make it popular among fire breathers [2]. However, occasionally, paraffin does not elicit a normal gag or cough reflex and it may also impair normal mucociliary transport [3]. We report a case of an amateur fire breather who accidentally inhaled liquid paraffin during an act and consequently developed lipid pneumonia. There are several reports of petroleum-induced pneumonia in fire-eaters [4,5], but to the best of our knowledge, this is the first report of paraffin-induced lipid pneumonia in a fire breather.

Case report

A 32-year-old man arrived in the emergency department with dyspnoea and a non-productive cough of 2 h duration. His symptoms had begun immediately after attempting to blow fire using paraffin as the volatile substance. He was in good general condition, afebrile and normotensive with a heart rate of 100 beats/min, a respiratory rate of 24 breaths/min and oxygen saturation of 100% breathing room air. His physical examination was within normal limits, and the gag reflex was present. A chest X-ray was normal. The patient was therefore discharged and instructed to return if his symptoms worsened.

He returned to the emergency department the next day with midsternal pleuritic pain and fever (38.1°C). There were no other changes on physical examination and an electrocardiogram was normal. Chest radiography showed perihilar punctate infiltrates (Figure 1). His white cell count was 16 400 with 89% neutrophils. Biochemistry and blood gases were within normal limits. He was admitted to the internal medicine department, treated with intravenous amoxicillin-clavulanic acid and achieved a clinical and laboratory recovery within a week. A close follow-up is planned.

Discussion

This is an unusual variation in the presentation of a common hazard associated with paraffin ingestion. Most cases of mineral oil aspiration and consecutive exogenous lipid pneumonia have been described in children treated for constipation or after accidental ingestion [1]. Fire entertainers must also be considered a population at risk.

Paraffin is a common name for a group of high molecular weight alkane hydrocarbons with the general formula
C\textsubscript{n}H\textsubscript{2n+2} [6]. Pharmaceutical liquid paraffin is used for various purposes, including as treatment for constipation, being poorly absorbed from the gastrointestinal tract and acting as a stool softener. In addition, it is a cheap ‘over the counter’ drug and because it has a high explosive point (90°/C) and is considered safe to swallow, it is commonly used by fire breathers.

The low viscosity of mineral oils can suppress the cough reflex, increasing the possibility of aspiration [3]. After aspiration, paraffin is deposited in the alveoli and may cause a wide variety of reactions, ranging from no distress to acute respiratory distress syndrome. The usual radiographic findings of exogenous lipid pneumonia are heterogeneous airspace opacities, mostly in both lower lobes, with possible superimposed reticular opacities. Occasionally, a localized consolidation can be seen [5].

‘Fire breathing’ consists of spraying a volatile substance from the mouth and igniting the spray, differing from fire-eating in which a flame is extinguished in the mouth. The fire breather must retain the volatile substance in the mouth, thus creating a risk of aspiration. Other hazards for fire breathers include skin irritation, various mouth diseases, stomach ulcers and burns as a result of a process known as ‘blowback’, in which a flame follows the fuel back into the performer’s mouth.

This case of exogenous lipid pneumonia in an amateur fire breather caused by accidental paraffin inhalation emphasizes the importance of obtaining an occupational history from every patient. To our knowledge, this is a first case reported in a fire breather, as opposed to a fire-eater (one previous report described a fire breather erroneously as fire-eater [7]). This may explain why paraffin was the harmful agent rather than petroleum, which is usually the case with fire-eaters. Fire breathers must be viewed as a population at risk for this phenomenon. We also believe that the use of liquid paraffin as a laxative in patients at risk of aspiration should be reconsidered and that labeling should draw attention to this possible risk.

**Figure 1.** Chest X-ray, postero-anterior (PA) (a) and lateral (b), taken during the second visit to the emergency department, showing perihilar punctuate infiltrates.

**Key points**

- This is a first case of paraffin-induced lipid pneumonia in a fire breather.
- Fire breathers must be viewed as a population at risk of paraffin-induced lipid pneumonia.
- The use of liquid paraffin as a laxative in patients at risk of aspiration should be reconsidered.

**Conflicts of interest**

None declared.

**References**