

Case report

Accidental poisoning of hydrocarbon in a child complicated lung abscess: a case report



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Received: 21 Mar 2020 - Accepted: 08 Apr 2020 - Published: 15 Apr 2020

Domain: Radiology, Pulmonology, Pediatrics (general)

Keywords: Hydrocarbon, lung, abscess

Abstract

Accidental hydrocarbon poisoning encountered in children is often a cause of pneumonia without complications or sequelae. We report a new case of pneumonitis hydrocarbons complicated parenchymatous lung abscess in a child of 3 years following accidental ingestion. The particularity of this clinical case is the scarcity of previous study.

Case report | Volume 2, Article 146, 15 Apr 2020 | 10.11604/pamj-cm.2020.2.146.22432

Available online at: <https://www.clinical-medicine.panafrican-med-journal.com/content/article/2/146/full>

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Introduction

Hydrocarbons exposure occurs by inhalation, ingestion with or without aspiration, or simply skin exposure [1]. According to the characteristics of the substance or its significant systemic absorption, many systems in the body can be affected by these same routes of exposure. The pulmonary system is most often affected by inhalation or aspiration [2]. The prevalence of severe pneumonitis after aspiration of hydrocarbon is less than 2% [3]. They are more frequently found in children during accidental ingestion [4]. However the acute intoxication to hydrocarbons often found in chemical pneumonia cases rarely develops the pneumatocele, lung abscess, pleural effusion or distress syndrome acute respiratory (ARDS) [5]. Thus, we report a case of pneumonia with hydrocarbons, complicated by pulmonary parenchymal microabscess.

Patient and observation

This was a 3-year-old boy admitted after 2 hours of accidental ingestion of gasoline. The mother would have tried to treat her child traditionally giving him milk, olive oil and honey. When he was admitted to our department, he had food vomiting without any respiratory signs or hyperthermia. Subsequently a biological assessment and a chest x-ray were carried out, but without anomaly. An antibiotic prophylaxis based on amoxicillin-clavulanic acid has been introduced. The patient was put under observation for 24h and released with appointment in a week. At three days post-ingestion of gasoline the child was readmitted for respiratory discomfort, irritative cough and appearance of hyperthermia at 39.3°C. On physical examination he was conscious, with a respiratory rate at 32 cycles/min, a heart rate at 120b/min, with pulmonary auscultation which revealed crackling rails at the right basal level. The biological assessment indicated a correct kidney function, a hemoglobin at 11.5g/dl, leukocytes to 16910/mm³, and the C-reactive protein to 210mg/l. Radiologically, the

frontal chest x-ray had noted the appearance of left superior lobar reticular opacities, and parabasal paraocular opacity, round with clear external contours, and internal erasing the cardiac edges realizing the sign of the silhouette that signs its anterior localization (Figure 1). The chest computerized tomography (CT) scan had individualized lung parenchymatous condensation, in the upper left lobe, middle lobar, and right lower lobar, traversed by an aerial broncho gram, of which the middle lobar was dotted with hypodense collections of fluid density, some of which confluent with contrast-enhanced walls in favor of pulmonary parenchymal micro abscesses (Figure 2). The boy was hospitalized for 10 days under 3rd generation cephalosporin antibiotic treatment. The evolution was marked by a good clinical and biological improvement with drop of leukocytes from 16910 to 9000/mm³, C-reactive protein from 210 to 14mg/l and total disappearance of the clinical symptomatology.

Discussion

Chemical pneumonitis is the most common complication of oil poisoning [6]. It occurs most often in children, by accidental ingestion and is a common reason for admission to emergencies in a tropical environment [7, 8]. Hydrocarbons being very volatile, very few are absorbed through the skin: absorption is primarily through respiratory and digestive [9]. Low viscosity and high volatility hydrocarbons such as gasoline, kerosene, stain removers and minerals are easily aspirated [1]. In domestic accidents, boys are the most affected, with a sex ratio (M/F) of 1.5 [9]. Our patient was male and had accidentally drank gasoline in a bottle thinking it was water. Intoxication is tracheal way, causing injury edema, either by duodenal absorption and passage in the alveoli. A secondary inhalation vomiting may worsen the clinical picture [9]. Lung complications which include development of a pneumothorax, a pneumatocele, an abscess, ARDS or broncho-pleural fistula are rare [10]. The beginning of

intoxication is often brutal, and the table is dominated by a dry, quintessential cough. Then, during the next few hours, dyspnea of variable intensity, chest pain and sometimes severe fever appear. Polynucleosis is almost constant and the rate of sedimentation is usually high [9]. The clinical symptoms of our patient began three days after ingestion of gasoline marked by respiratory discomfort, irritative cough and 39.3°C hyperthermia associated with elevated leukocytosis and C-reactive protein.

The chest x-ray immediately shows reticular or reticulonodular opacities, as well as condensations with fuzzy contours, sometimes confluent, more or less well systematized. Liquid effusions may be associated. Bilateral attacks are not uncommon. In a study of pneumonia with hydrocarbons: a case report, Benjelloun *et al.* found that CT showed homogenous pulmonary condensation of the right base associated with an air bronchogram and pleural effusion [9]. In our case, the x-ray had noted upper left lobar reticular opacities parabasal paraocular opacity, round with clear external contours, and internal erasing the cardiac edges realizing the sign of the silhouette that signs its anterior localization. The CT scan also revealed pulmonary parenchymal condensations associated with pulmonary parenchymal micro abscesses that are rarely found in the literature. Indeed, in the literature, the factors favoring the appearance of pulmonary abscess in the wake of hydrocarbon pneumonia are still unclear. Our case had developed pulmonary micro-abscesses after repeated vomiting following a traditional treatment provided by the mother. This may be responsible for inhaling the ingested food products and therefore considered as a likely factor promoting the development of lung abscesses. In the literature, antibiotics are used in almost all cases, while steroids are used only in some cases. However, it is difficult to determine whether the changes that occur in the first period of these cases are due to infection or not. Thus, a risk-benefit analysis suggests that antibiotics should generally be given as early treatment [11].

Borer and Koelz reported that treatment is vital and that in complicated cases, the use of antibiotics is beneficial [12]. Thus an antibiotic prophylaxis based on amoxicillin-clavulanic acid was instituted in our patient but given the appearance of signs of superinfection and complications, the antibiotic was changed by a third generation cephalosporin followed by a good clinical evolution and biological.

Conclusion

In sum, pulmonary abscess after ingestion of hydrocarbons remains a rare entity in the pediatric population. However, patients admitted to a chart of hydrocarbon poisoning must be fully assessed and given at least 48 hours of compliance, even if they do not suffer from breathing problems because it is important to keep in mind pulmonary complications that may occur. Last but not least, the best way to avoid pneumonia and their complication would be primary prevention and it would be advisable to put these substances out of the reach of children, by keeping them in their original packaging under cover of safety but also to make parents aware of the use of dietary substances or emetics as a means of detoxification, which is a source of complication.

Competing interests

The authors declare no competing interests.

Authors' contributions

All authors contributed to this work and read and approved the final manuscript.

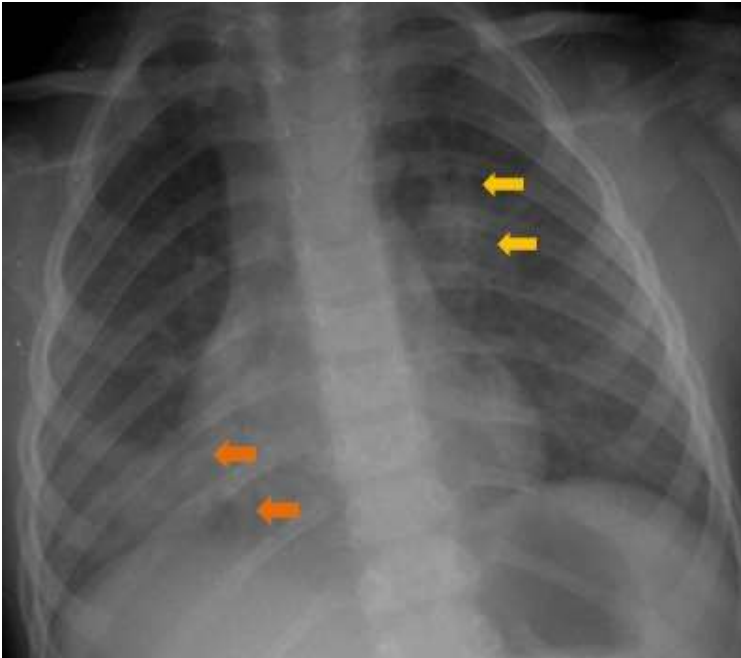
Figures

Figure 1: front chest x-ray

Figure 2: computerized tomography image at the thoracic stage in the mediastinal window in axial (A), sagittal (B) and pulmonary parenchymal window in axial section (C), coronal (D) with phosphatidyl choline (PDC) injection at the portal phase

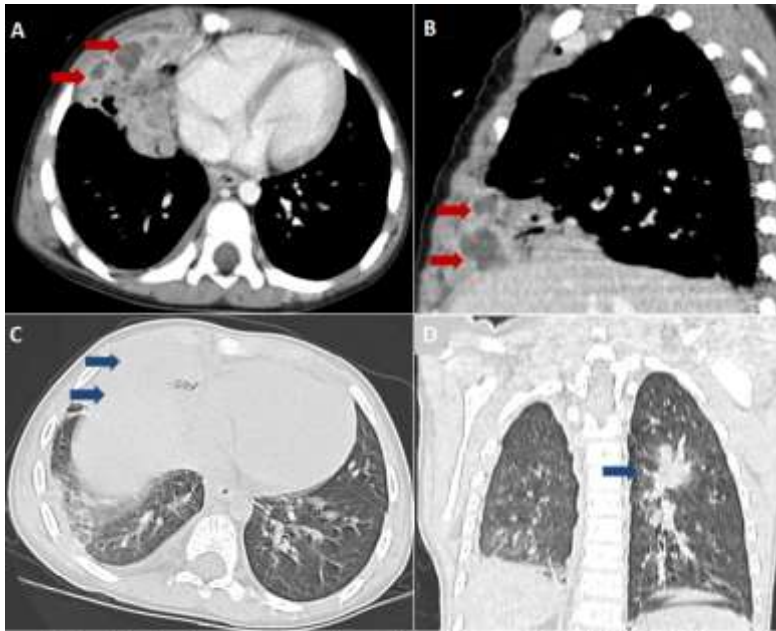
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- ➡ Left lobe superior reticular opacities
- ➡ Para basal paraocular opacity, round with clear external contours, and internal erasing the cardiac edges realizing the sign of the silhouette that signs its anterior localization

Figure 1: front chest x-ray



→ Parenchymal pulmonary condensation at the upper left and the middle lobar level
→ Hypodense collections of fluid density, some of which confluent wall-enhanced after contrast in favor of medium parenchymal micro-parenchymal lobe abscess

Figure 2: computerized tomography image at the thoracic stage in the mediastinal window in axial (A), sagittal (B) and pulmonary parenchymal window in axial section (C), coronal (D) with Phosphatidyl choline (PDC) injection at the portal phase