A rare case of diesel aspiration

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Sir,

Manual syphoning of diesel fuel from vehicle fuel tanks is a common practice in developing countries. Moreover, manual syphoning is a method used to drain fuel from the fuel tanks of motor vehicles.[1,2] Notably, severe chemical pneumonia may develop in the form of aspiration of gastric content following accidental direct aspiration of diesel fuel or its ingestion during manual syphoning.[3] Here, we report a case of diesel fuel-induced hydrocarbon pneumonia due to accidental aspiration of the fuel during syphoning via a fuel tank.

A 51-year-old man presented to our emergency department with complaints of chest pain, cough and gradually worsening dyspnoea that started to appear 2 days ago. Moreover, he presented with anamnesis, which indicated that he had aspirated fuel 2 days ago, while syphoning diesel fuel from the fuel tank, and complained of a cough lasting for 1 minute. His physical examination revealed dyspnoea and cyanosis. Auscultation revealed crepitus rales in both lungs, which were more prominent on the right. He had a pulse rate, respiratory rate, blood pressure and peripheral oxygen saturation of 98 beats/minute, 25 breaths/minute, 101/63 mmHg and 88% in room air, respectively. Furthermore, he underwent chest computer tomography (CT) because his chest radiograph revealed infiltration in both basal zones, and his chest CT scan demonstrated diffuse ground-glass opacities with a tendency to merge in both lungs [Figure 1a and b]. The arterial blood gas measurement taken at rest in room air at a laboratory revealed the following results: pH: 7.39, arterial partial carbon dioxide pressure (paCO2): 38.2 mmHg, arterial partial pressure of oxygen (paO2): 71.3 mmHg and arterial oxygen saturation (SaO2): 93%. His total leucocyte count was 16.500 cells per microliter, and neutrophil predominance was 92%. The patient was hospitalised in the intensive care unit with a diagnosis of hydrocarbon pneumonia due to diesel fuel aspiration. After blood and other appropriate cultures were sent, treatment with empirical broad-spectrum antibiotics, such as teicoplanin (loading dose of 400 mg intravenous (IV) q8h, followed by a maintenance dose of 400 mg IV q24h) and meropenem (1 × 1 g IV q24h), was started. On day 2 of intensive care unit hospitalisation, his clinical condition deteriorated dramatically; hence, he was intubated, and respiration was supported by mechanical ventilation. The findings of anterior–posterior (AP) chest radiography performed in the intensive care unit revealed bilateral, diffuse and homogeneous infiltrating areas [Figure 2]. The results of arterial blood gas analysis indicated a significant decrease in the ratio of partial pressure of oxygen in arterial blood to the fraction of inspiratory oxygen concentration (PaO2/FIO2) ratio (<100). These findings suggested acute respiratory distress syndrome (ARDS). Hence, aggressive supportive therapy and low-dose methylprednisolone treatment (1 mg/kg/day) were initiated. The patient had pulseless ventricular tachyarrhythmia on day 3 of intensive care unit hospitalisation, and he was declared dead after all resuscitation attempts.

Direct aspiration of diesel fuels, which are categorised under the hydrocarbons group, can cause severe chemical pneumonia.[2] After aspiration, hydrocarbons are not absorbed in the airway and rapidly reach the alveoli without causing coughing. They also cause bronchial oedema, tissue damage and surfactant destruction in the

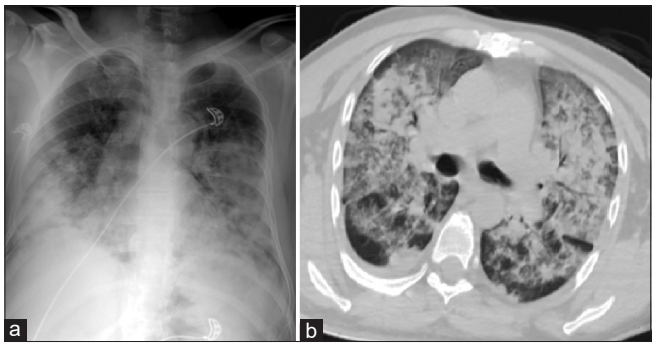


Figure 1: (a) Chest X-ray shows infiltrations in both basal zones. (b) Chest computed tomography shows widespread ground-glass areas in the lungs on the horizontal plane

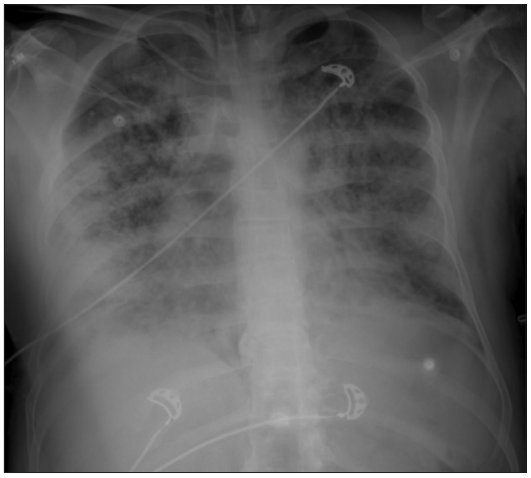


Figure 2: The findings of anterior–posterior (AP) chest radiography performed in the intensive care unit show bilateral, diffuse and homogeneous infiltrating areas

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alveoli.[4] These pathologic changes lead to macrophage activation and release of inflammatory cytokines.[5] Moreover, with the onset of inflammatory reactions, this process may lead to progressive lung damage, leading to fatal ARDS.[6] In the present case, the onset of inflammatory reactions deteriorated the patient's general condition and clinical picture. The diagnosis of ARDS is supported by a low PaO2/FIO2 ratio (<100), owing to a low PaO2 value in arterial blood gas despite severe respiratory distress and mechanical ventilation support.[7] In cases of hydrocarbon pneumonia after diesel fuel aspiration, chest X-rays may show consolidation in the middle and lower zones of the lungs and atelectasis and pleural effusion. Moreover, a chest CT scan may reveal a crazy-paving pattern, ground-glass opacities and consolidated areas with low attenuation.[8] The radiologic imaging findings in the present case were similar. Generally, radiologic findings improve after 2 weeks to 8 months of clinical improvement. However, in the present case, it was observed that the consolidated areas of the lungs increased in a short time. Despite the use of broad-spectrum antibiotics and supportive treatment, lung involvement increased, and the patient died on day 3 of his intensive care unit stay. Several treatment options for hydrocarbon pneumonia have been reported in the literature. Symptomatic and supportive treatments are usually used in such cases.[3] We also used symptomatic and supportive treatments in our case.

Hydrocarbon pneumonia caused by the accidental aspiration of diesel fuel can cause progressive and widespread damage to the lungs. To avoid the negative consequences of this uncommon fatal clinical condition, we believe that careful follow-up and aggressive supportive treatment should be applied from the time of patient admission.

Consent to publish statement

Written informed consent was obtained from the participant (or their parents/legal guardians/next-of-kin) for the publication of details of their medical case and accompanying images.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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