Diesel Siphonoer's Lung

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The Authors declares that there is no conflict of interest.

Abstract

Petroleum diesel is a complex mixture of liquid hydrocarbons and mainly used as fuel in transport vehicles. The practice of manual siphoning of diesel from fuel tanks is common in developing countries but hydrocarbon pneumonitis due to diesel siphonage is rarely reported.[1] We report pneumonitis following diesel fuel siphonage in a 32-year-old male patient. Initially patient had severe nausea and vomiting followed by chest pain and breathlessness after six days. Recovery was complete with medical treatment.

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Siphonage and Chemical Pnemonitis

Siphonage is the process of transferring fluid from a container to another container.[2] People occasionally siphon fuel to fill their tanks and it is potentially dangerous and could have severe consequences. Fuel oil is a mixture of long-chain saturated hydrocarbons obtained from petroleum. Aspiration or inhalation of oil results in hydrocarbon pneumonitis. Gastrointestinal ingestion usually results in transient vomiting, diarrhea, and abdominal pain. However, hydrocarbons disrupt surfactants, decrease pulmonary compliance, and cause a direct inflammatory response in the lungs. Symptoms can vary, ranging from diseases with a chronic indolent course to rapidly progressing fatal diseases.[3]

Fuel siphonage involves forceful suction from a hose and a large amount of aspiration, which can commonly result in an accelerated clinical process.[3] This route of poisoning is different from other cases commonly seen in cases of hydrocarbon pneumonitis, such as occupational exposure faced by fire eaters, accidental ingestion by children, and choking by aged or disabled patients.[4]

Although hydrocarbon aspiration results in multiorgan toxicity but it primarily presents with pulmonary symptoms. Most patients became symptomatic within 1 day of fuel siphonage.[5,6] Symptoms include Cough ,chest pain, dyspnoea and fever presented in more than half of all patients. Other clinical manifestations included rales or rhonchi, haemoptysis nausea or vomiting and epigastric pain.[7] Unlike fire eaters or patients with chronic diseases, who usually had sustained repeated episodes of aspiration and presented with an indolent disease progression, patients who experienced complications after fuel siphonage presented with an expeditious disease course; 80% of all cases showed obvious symptoms within 24 hours of siphonage.[8]

Diagnosis depends upon three criteria; 1.presence of pulmonary symptoms following an episode of fuel siphonage,2. typical manifestations on radiologic investigations (CXR or chest CT) with suspected history,3. lipid-laden macrophages on BAL or pathologic findings.

Apart from supportive care, treatments with intravenous antibiotics, steroids and BAL are common therapies. Although antibiotics are ineffective in the treatment of hydrocarbon pneumonitis, most patients with hydrocarbon pneumonitis undergo treatment with antibiotics because radiological differentiating between hydrocarbon pneumonitis and superimposed pulmonary infection is impossible. We present the case of a patient with severe hydrocarbon pneumonitis after fuel siphonage.[9]

Case report

A 32 years old male patient Driver by profession from Peshawar Bara region with medical record number 3438902 on dated 1\04\2019 presented to Pulmonology Unit Lady Reading Hospital with productive cough, fever and shortness of breath on exertion for duration of one week. Six days before, he had aspirated diesel while siphoning it from the fuel tank accidently. He developed nausea and vomiting soon after aspiring diesel but that was soon subsided after taking treatment locally at Basic Health Unit Bara region. On physical examination, patient was dyspnoeic but there was no cyanosis or peripheral edema. His pulse rate was 109 beats/min, respiratory rate was 26 breaths/min, blood pressure was 100/60 mmHg and oxygen saturation was 89% on room air. Chest examination showed crackles over left hemithorax.Cardiovascular and Neurological examination remains normal.

Investigation

The arterial blood gas analysis at room air revealed a PH of 7.41; PaO2 of 63 mmHg; PaCO2 of 32 mmHg and HCO3 of 20.4 meq/L.Blood smear showed leukocyte count of 11200/cu mm with nuetrophilic count of 79%.Chest x-ray done on the day of arrival showed bilateral patchy opacities more on the left side ,and repeat chest radiograph one week later in our hospital showed partial clearance of lung opacities (fig 1 and fig 2) . The smears and bacterial cultures of induced sputum were negative. Cytological examination of induced sputum revealed foamy macrophages establishing the diagnosis of hydrocarbon pneumonitis .

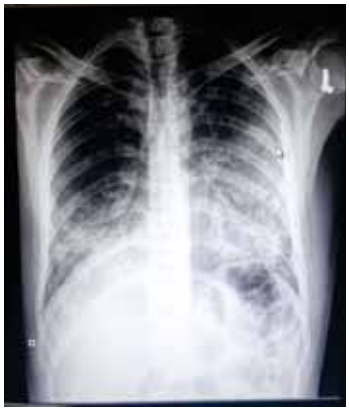

Figure 1: Chest radiograph showing multiple bilateral opacities more on the left side

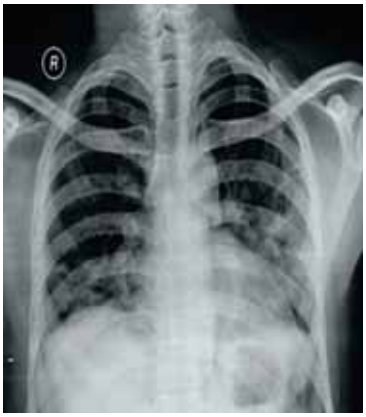

Figure 2: chest radiograph done after 5th day of admission, showing resolution of the opacities .

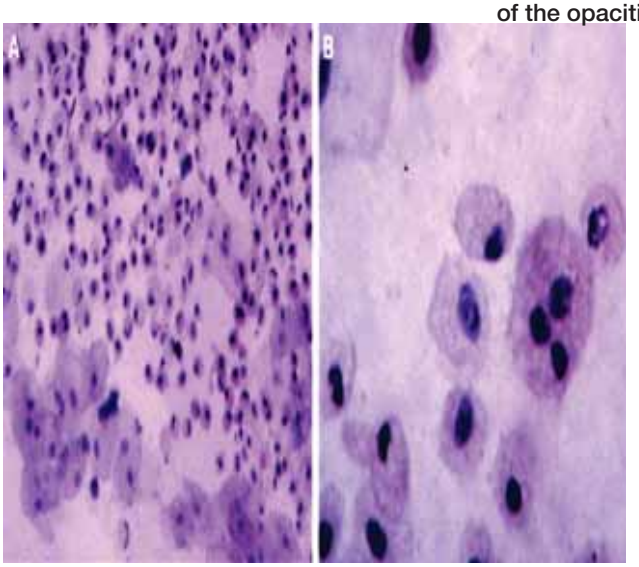

Figure: 3
A. Smear showing sheets of foamy macrophages admixed with squamous epithelial cells.
B. Smear showing foamy macrophages with bubbly (Vacuolated) Cytoplasm.

Management and Outcome

After admission, the patient received intravenous antibiotics (Tazobactum and Piperacillin 4.5gm q8h) ,steroid therapies (hydrocortisone 100 mg q12h),proton pump inhibitor (Omeprazole 40mg q24h) ,antipyretics (Paracetamol 1000mg intravenous q12h) and antiemetic (Metoclopramide 10mg q8h).

The first course of antibiotics and steroid was continued for 2 weeks. He later underwent bronchoalveolar lavage (BAL) to clean the tracheobronchial tree.

On regular follow up of the patient ,his CXR continued to display increased infiltrations, and pulmonary fibrosis,however his pulmonary symptoms had subsided, and his pulmonary function test was normal.and he was enrolled in a clinical trial.

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