Case Report:

Unusual case of accidental kerosene ingestion by an adult

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ABSTRACT

Accidental kerosene ingestion is uncommon in adults. We report the rare case of accidental ingestion of kerosene by a previously healthy 20-year-old woman resulting in left lower lobe pneumonitis with minimal pleural effusion. Pulmonary parenchymal lesions were seen only through computed tomography of the chest. Clinical recovery occurred quickly with supportive treatment but resolution of parenchymal lesions was evident on computed tomography of the chest at six months follow-up.

Key words: *Kerosene, Pneumonitis, Computed tomography*

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INTRODUCTION

Kerosene (also called as paraffin in some parts of the world) is one of the hydrocarbons derived from fractional distillation of petroleum. Kerosene is used mostly in developing countries by people with low socio-economic status for lighting and heating for cooking purposes. In India, kerosene is available in the market at subsidized price for use by the low income people. Accidental ingestion of kerosene occurs most commonly among children from poor families who store it in utensils used for storing drinking water and keep it in readily accessible places.[1] Following ingestion, aspiration of kerosene may occur either directly or indirectly though aspiration of vomitus and the most frequent manifestation is pneumonitis.[2] Other respiratory complications of kerosene aspiration include pnematoceles, pleural effusion, empyema, pneumothorax, pyopneumothorax, pneumomediastinum and surgical emphysema.[3,4] We report the rare occurrence of kerosene induced left lower lobe pneumonitis with minimal left pleural effusion in an adult woman.

CASE REPORT

A 20-year-old woman was referred with cough, breathlessness, fever and chest pain of three days duration. The illness started when patient sipped few mL of kerosene kept in a stainless steel tumbler used for drinking water in the kitchen in the darkness of the night mistaking it to be water. She became panicky after sipping kerosene and tried to induce vomiting. While doing so, she developed cough followed by left sided pleuritic chest pain and breathlessness. Immediately she was taken to a local hospital for treatment. Next day, she developed high grade fever with chills and was referred to our institute for further management. Initial enquiry with the patient and her husband separately did not reveal any motive behind kerosene ingestion. On physical examination, she was dyspnoeic at rest; there was no cyanosis or peripheral oedema. Her pulse rate was 120 beats/minute, blood pressure was 96/60 mm Hg, respiratory rate was 28 breaths/min, temperature was 38.5 ^{o}C and oxygen saturation while breathing room air on pulse oximetry was 88%. Respiratory system examination revealed

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decreased breath sounds over left hemithorax. Examination of other systems was unremarkable. Psychiatry evaluation did not reveal any significant psychiatric illness. Laboratory investigations showed a haemoglobin 8.8 g/dL. A postero-anterior chest radiograph (Figure 1) showed blunting of left costophrenic angle. Electrocardiogram showed normal sinus rhythm with non-specific ST segment changes. As cough was dry, sputum was induced through administration of nebulized hypertonic saline; diagnostic testing of induced sputum yielded negative results. Computed tomography (CT) of chest (Figure 2) showed left lower lobe consolidation with minimal left sided pleural effusion. Flexible bronchoscopy could not be done as the patient did not give consent for the procedure.The patient responded well to supportive treatment with supplemental oxygen, nebulized bronchodilators, intravenous hydrocortisone and antibiotic (amoxycillin-clavalunic acid) administration and was discharged after five days. Chest radiograph (Figure 3) at discharge was normal. After discharge, patient continued to do well but CT of chest (Figure 4) done at three months of follow up showed incomplete resolution of pneumonitis. However, complete resolution of consolidation was established on repeat CT of chest at six months of follow up.

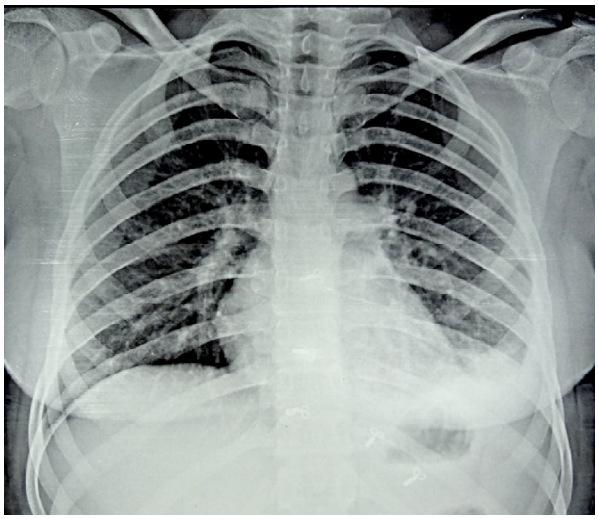

Figure 1: Chest radiograph (postero-anterior view) showing minimal left sided pleural effusion

DISCUSSION

Accidental ingestion of kerosene by adults is very rare but may occur in old age with cognitive impairment.[5] Kerosene stored in water bottle or glass in the kitchen can easily be mistaken as water in the dark. In our case, kerosene was kept in a stainless steel tumbler and the patient forgot to remove the remaining kerosene after cooking was over. Aspiration risk of any petroleum product is related to its physical properties like volatility, viscosity or surface tension. As kerosene oil has low viscosity and low surface tension, even a small quantity once aspirated can quickly reach distal airways and spread over a large surface area of the lung causing severe pneumonitis.[6] The most frequent site of kerosene induced pneumonitis is right lower lobe followed by perihilar infiltrations.[7] In our case, pneumonitis occurred in left lower lobe with minimal effusion. Experimentally, type II pneumocytes were mostly affected by the direct toxic effect of aspirated kerosene resulting in decreased production and ineffective function of surfactant, interstitial inflammation, intra-alveolar haemorrhage, hyperaemia, bronchial and vascular necrosis.[8] In the alveoli, the inflammatory reaction results in activation of macrophages which phagocytose hydrocarbon droplets. Detection of these lipid containing macrophages or foamy cells in the respiratory specimens with appropriate staining techniques

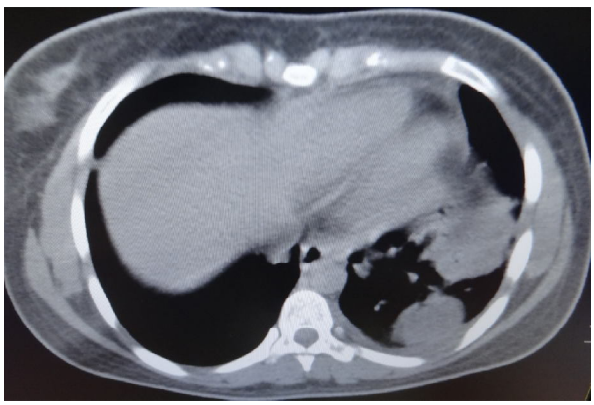

Figure 2: Plain CT of the chest showing left lower lobe consolidation with minimal left pleural effusion

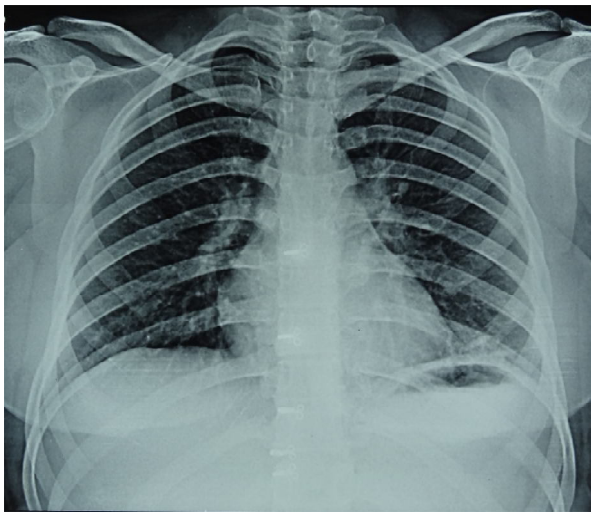

Figure 3: Chest radiograph (postero-anterior view) on the day of discharge showing normal findings

is the basis for diagnosis of lipoid pneumonia.[9] Flexible bronchoscopy is a useful tool for diagnosis hydrocarbon pneumonitis.[10] As flexible bronchoscopy was not possible, testing of induced sputum can help in the diagnosis of hydrocarbon induced pneumonitis.[11] The clinical and radiological features due to kerosene poisoning disappear quickly.[12] Our patient became asymptomatic and the pleural effusion resolved within a week. But resolution of left lower lobe pneumonitis occurred only at six months as documented by follow-up CT of chest. Mortality is low in kerosene poisoning and most patients recover with supportive treatment.[13] Our observations suggest that CT of chest is very useful for early documentation of pulmonary lesions and monitoring the outcome of treatment in kerosene induced pneumonitis.

Figure 4: Plain CT of chest obtained at 3 months of follow-up showing partial resolution of left lower lobe pneumonitis

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