

Case Report

Kerosene Poisoning – The Various Systemic Manifestations

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Received: February 29, 2020; Accepted: April 02, 2020; Published: April 09, 2020

Abstract

We present an unusual clinical manifestations in a case of kerosene poisoning. The patient came with encephalopathy and in the course of admission in the hospital developed renal tubular acidosis with delayed first-degree burns and myocarditis. With supportive therapy the patient recovered fully and was discharged without any repeat episode.

Introduction

The refined oil kerosene belongs to the hydrocarbon group of compounds, obtain from crude petroleum. Poisoning is usually due to inhalation of fumes or intake of small amounts accidentally or with suicidal intent. The typically encountered manifestations are due to the local caustic property of kerosene. Here we present a case of kerosene poisoning presenting with various systemic manifestations [1].

Case Presentation

A 16 years male presented to us in the emergency with alleged history of intake of a less than half bottle of kerosene followed by vigorous administration of salt water by relatives to tempt emesis. At examination, she was unconscious, responding to deep painful stimuli. She was normotensive (BP of 110/62) and had tachycardia (pulse rate 132/min) and tachypnoea (RR 38/min). There was no evidence of any fasciculation's. Her pupils were bilaterally the same and reactive to light. He had crackles in here right infraclavicular region. Arterial blood gases analysis on first day revealed an oxygen saturation of 69% suggestive of hypoxia. His renal function tests, liver function tests and hemogram were normal. X- ray chest showed right upper zone pneumonitis. ECG was indicative of sinus tachycardia [2,3].

In inspection of his pinpoint pupils and hypoxias status, he was treated with injection pralidoxime and atropine in appropriate doses, keeping in mind that the organophosphorus compound is contamination with kerosene, which is well well-known. Our patient also did received oxygen by mask. Invasive ventilation was not required and after few hours after admission, the patient regained consciousness. On second day, an arterial blood gas analysis (ABG) showed metabolic acidosis with a normal anionic gap. His urine pH was 5.2. The electrolytes sowed a newly developed hypokalemia ($K^+ = 2.4\text{meq/l}$). This suggested type 2 renal tubular acidosis (RTA).

On third day, we noticed superficial excoriations with hyperpigmentation over his buttocks and thighs, which were diagnose to be first degree burns. In spite of exclusion of atropine, our patient was found to have persistent sinus tachycardia with a pulse rate $>200/\text{min}$. A 2D echocardiography was performed which showed global hyperkinesias suggestive of myocarditis with a left ventricular

ejection fraction of 48% and along with minimal pericardial effusion prone to be of toxic etiology.

In due course of time, with antibiotics support, daily silver sulfadiazine dressings and other needed supportive measures, the patient recovered fully. A repeat 2-D echocardiography, two weeks later, showed normalization of ventricular function. Repeated serial arterial blood gases (ABG) analysis over a period of time showed correction of acidosis and hypokalemia [4].

Discussion

Kerosene poisoning is a generally an encountered emergency in medical practice. The fatal dose of kerosene for a 70kg adult is 100ml [5].

It causes a variety of systemic manifestations by a number of mechanisms. These can be enumerated as following:

- Hydrocarbons are lipophilic in character, hence they dissolve the lipids in the stratum corneum making the skin more exposed to drying, thereby causing skin lesions varying from bullae, blisters, maculopapular rashes and first degree burns. As in this patient, these manifestations may not be soon evident on admission and have to be looked for, on routine examination at regular intervals.
- Neural tissue, which is rich in myelin, a lipid constituent is acted leading by kerosene causing central nervous system depression and ventilator drive suppression.
- The myocardium is sensitized to endogenous catecholamines causing dysarrhythmias. Myocardial function may also be depressed leading in a poor left ventricular ejection fraction.
- Hydrocarbons are excreted by the lungs. They initially replace the alveolar gases and may lead to severe hypoxia leading to cyanosis. They are also easily aspirated and as they spread to the lower levels of the respiratory tree, bronchospasm and chemical pneumonitis may occur.
- Renal damage may result in type 2 renal tubular acidosis, as was seen in the patient.
- Autonomic dysfunction like hypotension, excessive sweating may also arise.

- Chronic exposure to kerosene is known to cause polyneuritis, liver injury, bone marrow suppression, acne and skin eruptions.

We report our case to bring to highlight, the unusual manifestations of a very common clinical problem. This 16 years male who ingested kerosene, developed encephalopathy, delayed first-degree burns, myocarditis and type 2 renal tubular acidosis during the course of his stay in our hospital. We would like to suggest meticulous observation and intensive investigation in any patient of kerosene ingestion to reduce the morbidity and possible mortality due to these rare manifestations.

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