

# Pulse Oximeter and Aid in the Assessment of Patients with Kerosene Poisoning

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## ABSTRACT

Pulse oximeter as an aid in the assessment of patients with kerosene poisoning

This case series study had been done to evaluate the role of pulse oximeter in the assessment of children presented with kerosene poisoning.

**Patient & methods:** Ninety-two patients their age ranged from 6 months to -12 years were admitted to the emergency department of AL-Khansa'a teaching hospital with a history of kerosene ingestion from the first of January 2012 to 31 of December 2012 pulse oximeter has done to all cases. The reading of pulse- oximeter between was done to all cases, also chest radiograph taken within the first hour because of respiratory distress. Treatment was supportive, including oxygen therapy intravenous fluids, bronchodilators, monitoring of pulse, and cardiac rhythm.

**Results:** The highest incidence occurs in age group (1-3) years with a mean age (2.1 years) and a male: female ratio was 1.7:1 most of the patients admitted with kerosene poisoning were during spring and summer months. Patients presented within first hour of exposure were 64 (69.57%) patients. The most common presenting symptom was cough, which is found in 77(83.70%)Reading of pulse oximeter>95% in 54(58.7%) patient,(95-90%) in 36 (39.13%) patient and less than 90% in 2(2.17) patient

**Conclusion:** pulse oximeter role was of limited value in the assessment and decision of admission in patient with kerosene poisoning.

**Keyword:** pulse oximeter, kerosene poisoning

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## 1. INTRODUCTION

All cases of poisoning that result from accidental use of drugs and chemical substance by children due to curiosity, are Hydrocarbon aspiration or no intentional poisoning<sup>[1]</sup>.

Hydrocarbon aspiration non accounts for 20% of aspiration accident &25% of all fatal ingestion in children of less than five years of age<sup>[2-3]</sup>.

The low viscosity and surface tension of kerosene allow it to be aspirated into the lung of people who have ingested it, provoking a chemical pneumonitis, which can be fatal if untreated<sup>[4]</sup>. Pneumonitis does not result from dermal absorption of hydrocarbon or from ingestion in the absence of aspiration.

Gasoline and kerosene are poorly absorbed, but often cause considerable gastro intestinal mucosal irritation as they pass through the intestine<sup>[3]</sup>; gastric emptying is nearly always contraindicated because the risk of aspiration is greater than any systemic toxicity<sup>[5]</sup>; gastric lavage would be only indicated. If it's use would produce better therapeutic result than is it was omitted<sup>[6]</sup>.

Patients who have ingested Hydrocarbon and do not have symptoms should be monitored for a minimum of 6 hour, with reassessment that may include repeat physical examination, plus oximetry and chest radiography during the last hour of observation patients who have ingested Hydrocarbon and have symptoms suggestion of aspiration should be admitted for a minimum of 24 hours for observation<sup>[4]</sup>.

## PATEINTS AND METHODS

Ninety-two patient admitted to the emergency in AL-Khansa'a teaching hospital with kerosene ingestion from the first of January 2012 to 31st of December 2012.

All patients admitted to casualty unit for at least six hours for observation and evaluation by history, clinical examination, chest x ray was done for every patient presented with kerosene ingestion whose include in the current study and assessment of associated factors. The participants were divided according to their age group under 12 months, 1-3 years, 4-5 years, 5-12 years). Complete physical examination was performed regarding cough, dyspnea, cyanosis, vomiting and if any CNS manifestation present.

## RESULTS

Children admitted during spring month and summer has had, highest occurrence 33(35.87%) and 28 (30.43%) patients respectively, most of the patients presented within first hour after exposure 64 (69.57%) patient, 21 (22.82%) patient presented to hospital after the first hour, but within the 3rd hour 7(2.60%) patient presented after the second hour, they ingested kerosene from small containers were 70 (76.09%) patient small cans, soft drink bottle and water bottle while 22 (23.91%) Ingested kerosene from special kerosene container.

Patient from urban 56(60.87%) while from rural area 36 (39.13%) Reading of pulse – oximeter patient was done to all cases and according to its reading we divided patients into three group :

Those with reading of >95% in 54(58.7%) patients of these 19 (20.65%) patients need admission to hospital because of persistent respiratory symptoms and/or radiological finding, p-value was (0.198) which is not significant in the decision of admission.

Those with reading between (95-90%) at presentation which was found in 36 (39.13%) patient and 18(19.57%) patient were admitted to hospital, P-value was (0.198) which is not significant in the decision of admission.

In 2(2.17%) patients the reading was less than 90 % unfortunately one of them died at an emergency within the first hour of arrival.

**Table 1: Pulse oximeter in admitted patients**

Reading of pulse-oximeter	No.admission	No. of discharge	Total No. of patients	p-value
>95%	19(20.65%)	35(38.04%)	54	0.198
95-90%	18(19.57%)	18(19.57%)	36	0.198
<90%	1(1.09%)	1(1.09%)died	2	1.000

### Chest x- ray

Chest – x-ray was done for all patients presented with kerosene ingestion. For 16(17.39%) patient chest x-ray was done within the first hour of admission. For 76(82.61%) patient chest x-ray was done after 6 hours. (table 2)

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

## CONCLUSION

A preponderance of males patients, and however age 1-3 years was the usual presentation of children especially in spring and summer, lack of supervision on a child of time of ingestion and bad storing of kerosene are main association factors. The respiratory system was the main target organ affected pneumonia in most of the cases occurred in the right lung base can occur bilaterally and to a lesser extent affected left lung.

The use of pulse oximeter for these patients could ease their primary clinical assessment and could be useful for further follow-up but, it is a limited role in the decision of discharge or admission from the emergency unit.

Hydrocarbon material must be out of reach of children, a six hours of observation at emergency should be the minimum time even in asymptotic presentation, education of the family about the danger of kerosene and different types of household products and chemical, also educate them not to induce vomiting when the child swallows these materials as

it will increase the risk of aspiration encourage program through different media about the dangers of storing kerosene whenever reach of children.

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