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Original Research Article

Clinical profile and outcome of children with kerosene poisoning in a tertiary care centre: a study from South India

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ABSTRACT

Background: Accidental poison ingestion is very common in children. Among this kerosene ingestion is the most common ingested poison by children. Knowledge about complications of kerosene poisoning is important to manage these children. The study is aimed to analyze the demographic and clinical profile along with the Outcome of children admitted with kerosene ingestion.
Methods: This retrospective study was done in Pediatric Intensive Care Unit of Government Villupuram Medical College, Villupuram from January 2016 to December 2016. The case records of all children were entered in a pre-structured Proforma and analysed on SPSS 20.0. P value of <0.05 was considered significant.
Results: A total of 116 children were included in the study. There was a male preponderance (61%) with the common age group being affected as 1 to 3 years (88%) and most of the cases were from rural places (94%) during April to June. Cough (62%) was the major symptom followed by breathlessness (51%) and fever (41%). Chest radiology showed right lower lobe infiltrates (45%) as common finding followed by left lower lobe infiltrates (32%) and bilateral lower lobe infiltrates (18%) as least.
Conclusions: The awareness of Kerosene Poisoning could reduce the morbidity and mortality rate as prevention of ingestion is the cure. These substances are not stored properly. Parental education is the hall mark in prevention of all acute Poisoning with due importance of acute Kerosene Poisoning at home.

Keywords: Acute poisoning, Breathlessness, Kerosene poisoning

INTRODUCTION

Kerosene is refined oil obtained by distillation and purification of crude petroleum. It is a hydrocarbon, used for cooking, heating and lighting as a cheap fuel which, due to cultural practices, unfortunately is stored in containers and places, which are accessible to children. Ingestion of kerosene is the important cause of serious accidental poisonings in the developing world.[1]

Accidental kerosene ingestion in children is the most common cause of poisoning in children admitted in Intensive care units especially in rural places where kerosene is commonly used a fuel for domestic purposes.[2]

Complications and morbidity due to kerosene poisoning are well known. Good knowledge about complications of kerosene poisoning is mandatory to manage effectively and save the children admitted with kerosene poisoning.

This study has been conducted to bring the Demographic data, clinical profile, outcome of children admitted with kerosene poisoning in a tertiary care centre which caters the need of children from rural population. More over regional data should be available for better management as well as counselling of caretakers.

Many studies were conducted in poisoning in children. Kerosene is a most common hydrocarbon used as fuel in

rural set up which is being most of the time accidentally consumed by children.

These children are often referred to a tertiary care centre for management. Studies from South India are very minimal on this common poison and this study will be definitely useful to manage the children effectively.

METHODS

This is retrospective study done in a tertiary care teaching hospital. Children admitted with history of consumption of Kerosene poisoning were identified and case sheets of those children were retrieved from Medical records department after obtaining the permission from medical superintendent. This study was conducted in Intensive Care Unit in Pediatric Department of Government Villupuram Medical College during the period of January 2016 to December 2016.

Inclusion criteria

- All children less than 12 years admitted with kerosene ingestion were included in the study

Exclusion criteria

- Children older than 12 years
- Children with history of consumption of unknown poison
- Children with history of multiple poisons subjects.

Case records of children admitted in inclusion criteria were analysed. Demographic profile like age, sex, place of residence and date and time of consumption were recorded. Clinical data like mode of presentation, other clinical symptoms, duration of stay and outcome were also entered. All children were taken chest X-ray after 6 hours of consumption and radiological findings were entered. All the above details were entered in a pre-structured Proforma. Data were tabulated, and descriptive analysis was done using SPSS 20.0

RESULTS

A total of 116 children were admitted in Pediatric intensive care unit with history of kerosene ingestion during the study period. There were 71 male children and 45 female children with male predominance (61%). The duration of stay in hospital ranges from 1-7 days with an average of about 3 days.

On analyzing the age group of children about 5 (4%) were less than 1 year, 102 [88%] children between 1 to 3 years, 6 (5%) were between 3-6 years and 3 (3%) belonged to between 6-12yrs. Maximum number of children were between 1-3yrs of age group. With reference to the residing place 109 (94%) children were from rural population and 7 (6%) were from urban. Kerosene poisoning was more common during the months of April to June (76%) (Table 1).

Table 1: Demographic profile.

Profile	Number of patients	Percentage
Sex		
Male	71	61
Female	45	39
Age		
<1 year	5	4
1-3 year	102	88
3-6 year	6	5
6-12year	3	3
Season		
Jan-March	17	15
April-June	88	76
Jul-September	6	5
Oct-December	5	4
Residence		
Rural	109	94
Urban	7	6

The most common presentation of kerosene poisoning was cough which accounts for 62% (72) of cases. The other modes of presentations were breathlessness in 51 (43%) cases and fever in 48 (41%) cases. Fever lasted for 2-6 days in most of the cases.

Other symptoms like vomiting, abdominal pain and CNS symptoms like drowsiness and seizures were also documented. All the cases improved after treatment and discharged (Table 2).

Table 2: Clinical Profile.

Clinical features	No. of children	Percentage
Cough	71	61
Breathlessness	51	43
Fever	48	41
Vomiting	42	36
Drowsiness	31	26
Abdominal pain	22	19
Grunting	12	10
Seizures	2	1

Chest X-ray findings were analyzed, of which 45% of children had Right lower lobe infiltrates, 32% had Left lower lobe infiltrates and 18% of children had bilateral lower lobe infiltrates and the remaining 5% had normal chest X-ray (Table 3).

Table 3: Radiological Profile

Chest X-ray findings	Percentage
Right lower lobe infiltrates	45
Left lower lobe infiltrates	32
Bilateral lower lobe infiltrates	18
Normal	5

DISCUSSION

In rural places where kerosene is used as a fuel commonly, poisoning due to the same is also common. Kerosene poisoning in children remains definitely a major cause for morbidity. The common age group of children affected in this study is 1-3 yrs similar to that observed in studies by Wakil Paswan et al and Kumaravel et al.[3,4] This can be explained by the natural behaviour of children at 1 to 3 years during which the children are inquisitive, put things in their mouth and they are more mobile and able to get hold of poisons.

In this study, male children 61% are more affected than female child, which is similar to Wakil Paswan et al, Kumaravel K S, Lucas et al and Emad Siddique et al.[3-6] Most of the children were from rural places similar to Anwar S et al and Sunilkumar et al, but in contrast to Kumaravel et al study where it was urban dominance.[3,7,8]

Kerosene in rural population is stored in bottle containers and children can mistake it for soft drinks. Children tend to drink anything from bottle which has good aroma. As thirst and dehydration are more common in summer season, along with the child's behaviour, Kerosene poisoning is more common in summer season. In this study the peak season of kerosene poisoning is April to June who accounts for 76% of cases, which is similar to Anwar S et al and Wakil et al.[3,7] Kerosene toxicity predominantly affects the respiratory system due its high volatility it is directly aspirated into the lungs. Regarding central nervous system which is rich in a lipid component myelin, kerosene acts on the compound and causes drowsiness, altered mentation and in severe cases respiratory failure. In our study, Cough was the major symptom present in 61% of children whereas it was found in 85% in Kumaravel study, 90% in Nagi NA et al study 80% in Lucas et al and 82% in Wakil Paswan study and Sunilkumar et al.[3-5,8,9] Fever was present in 41% cases in this study compared to 69% in Wakil Paswan study, 83.5% in Nagi study and 3% of cases in Kumaravel study.[3,4,9] Vomiting following consumption of kerosene was found in 36% whereas it was found in 69% cases in Kumaravel study and Nagi study showed 60.6%.[4,9] Two children had convulsions in this study similar to Kumaravel et al.[4] Regarding radiological findings Right lower pneumonitis is the most common finding which is similar to Cachia et al, Nagi NA et al and Sunil kumar et al.[8-10]

CONCLUSION

In this study it is clear children between 1-3 years are most affected as they once started walking and try to explore things. This finding correlate well with the developmental age of the child. The period of incidence was April-June in most of the cases probably due to the climatic conditions and secondary to increased thirst. More over in rural areas where kerosene is stored in glasses and pet bottles result in more incidence of kerosene ingestion. This shows counselling for caretakers is must in order to decrease the incidence of kerosene poisoning. The awareness of Kerosene Poisoning could reduce the morbidity and mortality rate as prevention of ingestion is the cure. These substances are not stored properly. Parental education is the hall mark in prevention of all acute Poisoning with due importance of acute Kerosene Poisoning at home.

Even though death due to kerosene poisoning is rare, precautions should be taken to avoid kerosene poisoning and hence mortality and morbidity secondary to it. Looking at the annual disease burden of kerosene poisoning in India, the Government needs to take concrete steps to prevent innocent children of our country to suffer and succumb to kerosene poisoning. Kerosene should be classified as hazardous chemical. It should be dispensed in containers having pictorial warnings with skull and bones to deter children.

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