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Clinical Profile of Kerosene Poisoning in a Tertiary Level Hospital in Bangladesh

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Abstract:

***Background**: Accidental ingestion of kerosene continues to remain a common medical emergency among children in developing countries. The importance of this poisoning makes it imperative that parents should be aware about this poisoning.*

***Objective:** To see clinical profile of Kerosene poisoning in Bangladesh.*

***Methodology:** This retrospective study analyzed 56 children with acute kerosene poisoning admitted in Dhaka Medical College Hospital from January 2010 to June 2010*

***Result:** Fifty six kerosene poisoning cases were admitted within 6 months period. Among the cases boys 29(51.8%), aged less than three years 52(93%), from a rural background 36(64%) and belonging to lower economic class 51 (91%) were found. Inappropriate container of kerosene like soft drink bottle 40(71%) & summer season 40(71%) were found major risk factor for kerosene ingestion. Cough 52 (92%) and dyspnea 51(91%) were the commonest clinical findings.*

***Conclusion:** Respiratory complaints are predominant clinical features of Kerosene poisoning. Toddler age, children from rural area, summer season were found major risk factors for kerosene ingestion and is mostly due to faulty packing & storage of kerosene.*

Background

Kerosene is a refined oil obtained by distillation and purification of crude petroleum or rock oil. It is a hydrocarbon, used for cooking, heating and lighting- 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 causes of serious accidental poisonings in the developing world.[1,2] Kerosene has been identified as the most common cause of accidental poisoning in studies on children in South Africa,[3] West Bengal,[4] India[5] and Pakistan.[6,1,2] Inadequate legislation on the sale of kerosene allows it to be sold in unlabelled containers.[7]

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The pattern of poisoning varies in different areas and also with changing times. Aspiration usually occurs at the time of ingestion when coughing and gagging are common, but can result from vomiting after ingestion. Ingestion of even 1 ml of kerosene oil is significantly related to pulmonary complications and more than 10 ml may be fatal.

Low viscosity of kerosene enhances penetration into more distal airways and low surface tension facilitates spread over a large area of lung tissue. Most accidents usually occur due to negligence, parents or the guardian to prevent exposure of the child to harmful substances. [8] Frequent use of kerosene oil, as for cooking in rural areas and urban slums, low socio-economic status are the major causes. The under-five age group is main sufferer[4-6]. So early recognition & intervention is imperative to prevent the life threatening complications of Kerosene poisoning. There is limited research pertaining to clinical profile of Kerosene poisoning in Bangladesh. It was planned to see the clinical profile of Kerosene poisoning which could be a valuable source of policy recommendation & could raise community awareness. So the objective

of this study to see the clinical profile of kerosene poisoning in children

Materials and Method:

It was a retrospective study. Case records including chest radiographs of 56 children with Kerosene poisoning admitted in Dhaka Medical College Hospital from January 2010 to June 2010 were included for this study. From case records data regarding demographic, risk factors for kerosene ingestion and clinical features were collected. Available Chest X-ray those were done after 24 hour of ingestion of kerosene were included in this study. Within the study period April-June were labeled as summer. Collected data were analyzed with the help of software SPSS window version 12. Ethical issues were addressed properly.

Result

Among the total cases (n=56) 1-3 years age group was 93%(52/56) and 3-10 years age group 7%(4/56). Among the cases 51.8%(29/56) were male and 48.2%(27/56) were female.

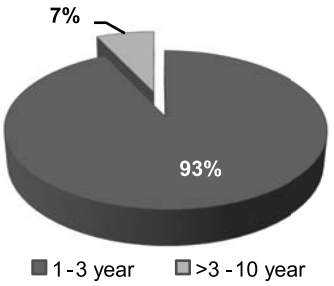

Fig.-1: *Age group distribution of the cases (n=56*)

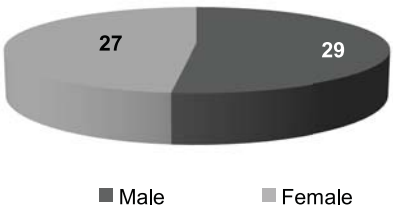

Fig.-2: *Gender distribution among the cases (n=56)*

Among the study population 64% were from rural area and 91% were from low socioeconomic status. Soft drinks bottles were used for packing and storage of kerosene in 71%(40/56) cases which is faulty and only in 9% cases in appropriate container. Seasonal variation of kerosene poisoning occurrence was January-March 29% and April-June 71% showing 2.4 times more kerosene poisoning occurred in summer season as shown in table-I.

Table I

Risk factors for Kerosene ingestion (n=56)

Risk factors	Frequency (%)
Residence	
Urban	20(26%)
Rural	36(64%)
Socioeconomic status	
Middle class	05(9%)
Lower class	51(91%)
Packing & storage of kerosene	
Soft drink bottle	40(71%)
Lamp	11(20%)
Appropriate container	05(9%)
Season of the year	
Jan-March	16(29%)
April-June	40(71%)

Considering clinical presentation 93%(52/56) were found symptomatic and only 7% were asymptomatic. Table-II showing cough and dyspnea were the commonest clinical findings in kerosene poisoning. Radiological evidence of pneumonia was found in 30%(17/56) of cases.

Table-II

Clinical manifestation of kerosene poisoning (n=56)

Clinical manifestation	Frequency(%)
Cough	52(93%)
Dyspnea	51(91%)
Drowsiness	27(48%)
Fever	26(46%)
Vomiting	19(34%)
Cyanosis	16(29%)
Abdominal pain	2(4%)
Bloody stool	1(2%)
Excoriation of skin	1(2%)
No symptoms	4(7%)

Discussion:

Acute childhood poisoning is a common medical emergency with considerable morbidity and mortality in our country where Kerosene was the commonest form of ingredient to be used. We found that most of the children suffered from this poisoning were ranging from 1 to 3 years age group which is similar with Rashid et al.[9] This age range of children is probably due to their natural reflexes to put objects into mouth. In this study most of the children came from lower socioeconomic class family that is similar with the study of Mahdi AH.[10] It was also found that most of the cases occurred in rural areas that may be due to easy accessibility of kerosene. In this study we observed that the accidental kerosene ingestion occurred mostly in April corresponds to the early heat wave of summer, which is similar with the experience of L. Nouri and K. Al-Rahim.[11] A very striking feature of this study is the usage of empty bottles of soft drink as the container for kerosene is related to the most of the poisoning. This may be due to the childhood conception of soft drink that misleads those babies to drink kerosene from the same type bottles during thirst. Kerosene poisoning commonly occurs due to negligence and unawareness of parents or caregivers regarding kerosene storage in appropriate container and place. Kerosene is a hydrocarbon and the toxicity of kerosene depends upon its contents of naphthenic and aromatic hydrocarbons causing a variety of systemic manifestations. Primarily it results pulmonary complications for which ingestion of even 1 ml is enough. [12-15] It is also easily aspirated and spread to the lower levels of the respiratory tree resulting bronchospasm and chemical pneumonitis. Again neural tissue, which is rich in myelin, a lipid component is acted upon by kerosene causing central nervous system depression and ventilatory drive suppression. Most of the children in this study, developed cough and dyspnea. Radiological changes were found in 61% cases by Annobil SH & Ogunbiyi OA[16] though we got 30% cases in our study. The overall outcome implies the effectiveness of hospital treatment that was also evident by the absent of any death or other systemic complication from acute poisoning. Parents should be warned about storage of Kerosene. So policy may be taken to sell kerosene in the labeled container in rural area to prevent accidental kerosene poisoning in children.

Conclusion:

Respiratory complaints like cough and dyspnoea are the two most common symptoms in kerosene poisoning. Toddler age, children from rural area, summer season was found major risk factors for kerosene ingestion and is mostly due to faulty packing & storage of kerosene. Awareness should be build up regarding kerosene storage and policy may be taken to sell kerosene in the labeled container and thereby prevent most of the accidental kerosene poisoning in children.

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