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ORIGINAL ARTICLE

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## Accidental Poisoning in Children with Special Reference to Kerosene Poisoning

by

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### Abstract

A 6-year (1970 - 1975) retrospective study of kerosene poisoning in children admitted to the General Hospital, Medan, is presented. The total number of admission was 10,643, 124 of which were kerosene poisoning. The mortality was 4.8%. In North Sumatera the incidence of kerosene poisoning along with the consumption of kerosene showed an increasing trend. The male to female ratio was 75 by 49 (3 : 2). The majority of cases were brought to the hospital within one hour after ingestion of kerosene.

The presenting symptoms in the majority of cases were coughing (78.8%), vomiting (48.9%), dyspnoe 29%, fever 20.9%, brochopneumonia 12.9%, cyanosis 4.0%, and shock 1.6%. Treatment consisted of broad spectrum antibiotics, intravenous fluid, and oxygen administration. Kerosene in the household of the patients was used as fuel, either for cooking, or light source. More than 75% of the cases belonged to the lower socioeconomic class.

### Introduction

Kerosene is a hydrocarbon complex derived from petroleum. Ingestion of this liquid produces signs of intoxication and sometimes leads to fatality. Kerosene poisoning is one of the accidental poisonings which ranks among the first few important causes of mortality and morbidity in children. This study attempts to report a continual increase in the number of cases of poisoning in children in the Pediatric Unit, General Hospital, Medan, over a 6-year period (1970 - 1975).

### Material and methods

This is a retrospective study of cases with kerosene poisoning admitted during a period of 6 years from 1970 to 1975 to our Pediatric Unit, General Hospital, Medan. The diagnosis was based on the history of kerosene ingestion and clinical

findings. X-ray examination was only done when indicated. All cases were given injection of penicillin and streptomycin. Broad spectrum antibiotics were administered in cases developing respiratory complication and fever, while intravenous fluid and oxygen were given only when necessary.

### Results

There were 124 cases of kerosene poisoning in the Pediatric Unit, General Hospital, Medan, during a period of 6 years, being 1.2% of the total admission (Table 1). The peak incidence was at the age group of 1 - 3 years. About half of the total cases occurred in this age group (62 cases). Next came the age group below one year (47 cases, 37.9%) shown in Table 2. Table 3 shows that the sex distribution of the cases was 75 males against 49 females giving the ratio of 3 to 2.

TABLE 1: Incidence of kerosene poisoning and its percentage

Year	Total number of admission	No. of cases	Percentage
1970	1672	13	0.78
1971	1808	14	0.78
1972	1289	11	0.85
1973	2512	26	1.04
1974	1630	25	1.66
1975	1732	35	2.02
Total	10,643	124	1.2

TABLE 2: Age incidence

(years) Age	1970	1971	1972	1973	1974	1975	Total
< 1	6	5	4	14	10	8	47
1—3	6	7	6	11	11	21	62
3—5	1	2	1	1	1	2	8
≥ 5	2	—	—	—	1	4	7

TABLE 3: Sex incidence

Sex	1970	1971	1972	1973	1974	1975	Total
Male	9	11	7	17	15	16	75
Female	4	3	4	9	10	19	49

In the majority of cases (56.4%) the quantity of kerosene ingested was 10 ml. In 2 cases (1.8%) the quantity of kerosene ingested was unknown. Only in 4 cases (3.2%) kerosene taken was about 100 ml. (Table 4). As shown in

Table 5 the majority of cases were brought to the hospital within one hour after ingestion of kerosene (58.8%). Thirty cases were brought within 2 hours (24.2%), and only 4 cases were brought after more than 6 hours.

TABLE 4: Quantity of kerosene ingested

Quantity (ml.)	No. of cases	Percentage
< 10	70	56.4
10—30	30	24.1
30—50	18	14.5
50—100	4	3.2
Unknown	2	1.8

TABLE 5: *Duration before admission*

H o u r	1970	1971	1972	1973	1974	1975	Total
< 1	8	5	9	18	14	19	73
1—2	3	5	2	5	7	8	30
2—4	1	2	—	3	4	6	16
4—6	1	—	—	—	—	—	1
≥ 6	—	2	—	—	—	2	4

The prevailing symptom in the majority of cases was coughing (78.8%); vomiting was present in 48.9%, dyspnoea in 29%, and cyanosis in 4.0%. Hyperpyrexia was not present in all cases. Complication developed in the respiratory system: 16 cases (12.9%) developed bronchopneumonia and 2 (1.6%) had bronchitis.

The involvement of the central nervous system was seen only in 14 cases

(11.3%), which were restless on admission. Two cases came with shock (Table 6). Most of our cases were discharged on the first 3 days. Only 3 cases were kept longer; one case was discharged on the 8th day and the other two cases were kept for 10 and 13 days. Six cases (4.8%) out of the total number of 124 cases died. The majority of these fatal cases were brought to the hospital after more than 2 hours of kerosene ingestion (Table 7).

TABLE 6: *Clinical picture of kerosene poisoning*

Clinical picture	No. of cases	Percentage
Coughing	98	78.8
Vomiting	61	48.9
Dyspnoea	36	29.0
Fever	26	20.9
Bronchopneumonia	16	12.9
Restlessness	14	11.3
Cyanosis	5	4.0
Shock	2	1.6
Bronchitis	2	1.6

TABLE 7: *Mortality*

Year	No. of cases	Death
1970	13	—
1971	14	2
1972	11	—
1973	26	1
1974	25	1
1975	35	2

### Discussion

A retrospective study was done on 124 cases of kerosene poisoning in children admitted during the period of 1970 - 1975. The percentage of kerosene poisoning showed an increasing trend each year. This might be due to a continual increase of kerosene consumption in North Sumatera each year. As shown in Table 2 the highest incidence was in the age group of 1 - 3 years. This was similar to the observation of Talati and Gandhi during 1968. A child between 1 - 3 years is already able to stand and walk about to reach kerosene out of curiosity and drink it. The majority of cases were males; this might be due to the greater activity and love of adventure of boys.

In most of the cases the quantity of kerosene ingested was not more than 10 ml. This is mostly due to the smell of kerosene and immediate development of the respiratory system gave rise to

various manifestations in the form of coughing, dyspnoe, bronchopneumonia, bronchitis, and cyanosis. In the gastrointestinal system, the only manifestation observed was vomiting (61 cases). These represented 48.9%. The involvement of the central nervous system was seen in few cases. Fourteen cases (11.3%) were restless on admission and 2 cases were in shock.

The incidence of fever in our cases (20.9%) was mostly the same as the findings of Talati and Gandhi in 1973 (24.0%). Fever was present in 88.0% of the cases of Jhatakia et al (1954) and in 80.9% of Coehlo's series (1953). It accounted for 72.9% and 59.0% of cases in the study of Ghosh and Aggarwal (1962) and Buhariwalla and Sanjawalla (1969) respectively. The higher incidence of bronchopneumonia and vomiting might be due to the ingestion of a large quantity of kerosene. More than 75% of the cases belonged to the lower socio-economic class.

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