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Accidental Childhood Poisoning in Calabar at the turn of the 20th Century

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Summary

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Background: Accidental poisoning is a preventable cause of childhood morbidity and mortality. Therefore, knowledge of the common causative agents is necessary in order to create awareness among caregivers towards its prevention.

Objectives: To document the pattern of accidental childhood poisoning in Calabar from 1996 to 2000, and to compare the findings with those of a previous study from the same centre.

Methods: A retrospective study of cases of poisoning seen at the University of Calabar Teaching Hospital over five years was undertaken. The data extracted from the case files included age, sex, date of admission, poison ingested, home address, social class of parents, duration of admission and outcome.

Results: There were 45 cases of accidental childhood poisoning out of 20,539 patients seen; an incidence rate of 2.2 per 1000. Twenty-seven (60 percent) of the cases occurred in subjects aged one to two years. Thirty-three (73.3 percent) were males while 12 (26.7 percent) were females. All the cases were children whose parents were from socio-economic classes IV and V. The commonest poison was kerosene in 26 (57.8 percent) cases, followed by alcohol in 10 (22.2 percent), caustic soda in five (11.1 percent), drugs in three (6.7 percent), and bleach in one (2.2 percent). There was an overall mortality of 20 percent; the mortality rates following caustic soda, kerosene, and alcohol were 100 percent, 11.5 percent and 5.5 percent, respectively.

Conclusion: The most common agent of accidental childhood poisoning in Calabar was kerosene, followed by alcohol, while the agent with the highest mortality rate was caustic soda. The most vulnerable age group was the under two-year old. The findings of this study call for intensified health education aimed at creating awareness of the need to store these agents away from the reach of children.

Introduction

ACCIDENTAL poisoning is an important cause of hospital admissions and deaths, being surpassed only by nutritional, infectious and parasitic diseases.[1-3] The frequency of poisoning and type of poison ingested vary from place to place.[4-6] In 1984, Asindi[7] studied cases of poisoning in the children's emergency room of the University of Calabar Teaching Hospital and reported that kerosene was the commonest cause of childhood poisoning. This finding was corroborated in 1992 by Antia-Obong[8] who observed that accidental poisoning was the ninth most common cause of paediatric emergencies in Calabar, with kerosene as the leading agent. This is similar to reports from other institutions in various parts of the country.[6,9,10,11] Joubert,[12] in his study of black South Africans, similarly noted that kerosene accounted for 59 percent of cases of acute poisoning, followed by traditional medicines (15.5 percent). This pattern appears consistent with reports from Saudi Arabia[13,14] where hydrocarbon (kerosene) ingestion was the most common finding followed by drugs, other household chemicals and pesticides. In contrast however, studies from Pakistan,[15] USA,[16] Qatar[17] and UK[18] have reported drugs as the principal offenders. The present retrospective study is

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aimed at updating our knowledge on the current pattern of accidental poisoning among children in Calabar and comparing the findings with those obtained earlier in the same institution.

Materials and Methods

The records of children admitted into the children's emergency room (CHER) of the UCTH, Calabar over a five-year period (January 1996 - December 2000) were reviewed. The data extracted from the records included patient's age, sex, date of admission, the poison ingested, home address, parents' occupation and educational status, duration of admission and outcome. The data presented were analyzed using a test of comparison of proportions; p-value < 0.05 was regarded as being statistically significant.

Results

During the five-year period, a total of 20,539 children were seen, 45 of whom were cases of accidental poisoning. This corresponded to an incidence rate of 2.2 per 1000 patients seen. Table 1 shows the ages of the subjects, which ranged from seven months to 12 years (mean 2.5 years); 30 (66.7 percent) were below the age of two years. Thirty-three (73.3 percent) were males while 12 (26.7 percent) were females.

Table I

Age Distribution in 45 Cases of Poisoning

Age (Years)	*No. of Cases*	*Percent*
< 1 year	3	6.7
1- 2 years	27	60.0
> 2 – 5 years	8	17.8
> 5 – 9 years	5	11.1
> 9 – 12 years	2	4.4
Total	45	100.0

The commonest poison was kerosene, which accounted for 26 (57.8 percent) cases, followed by alcohol (local gin, brandy, whisky) in 10 (22.2 percent), caustic soda in five (11.1 percent), drugs in three (6.7 percent) and bleach in one (2.2 percent) case. Eighteen (69.2 percent) of the children who ingested kerosene were between one and two years (mean age 1.4 years). Alcohol ingestion accounted for 10 cases (22.2 percent). The majority of cases occurred in children aged between two and nine years (mean 6.5 years). Caustic soda ingestion was responsible for five cases (11.1 percent). It occurred mainly in children below two years of age. The three cases of drug ingestion accounted for 6.7 percent. Of the three, one child ingested haloperidol while the agents were unknown in the other two. The only household agent identified as a cause of poisoning was bleach.

At the point of ingestion of these poisons, kerosene and alcohol were stored in empty bottles of beer, soft drinks and *"Lucozade."* Caustic soda was stored in beverage containers whose lids were already broken; drugs were in plastic dispensing bags or envelopes, and bleach was in a plastic bottle without secure lid. The parents and caregivers belonged to socio-economic classes IV and V, as determined by the method of Olusanya.[19]

There were nine deaths, giving an overall mortality rate of 20 percent. The mortality rate following caustic soda ingestion was 100 percent (five of five), while the rates were 11.5 percent (three of 26) and 10 percent (one of 10) for kerosene and alcohol, respectively (Table III). Seven of those who died were males. Those who died after caustic soda ingestion stayed in the hospital for five to seven days, with the exception of one case that died one day after admission. The duration of hospital stay among the remaining four who died from

Table II

Types of Poison ingested by Various Age Groups

Poison	*Age Groups (years)*					
	<1	*1-2*	*>2-5*	*>5-9*	*>9-12*	*Total (%)*
Kerosene	1	18	6	1	0	26 (57.8)
Alcohol	-	3	2	3	2	10 (22.2)
Caustic soda	2	2	-	1	-	5 (11.1)
Drugs	-	3	-	-	-	3 (6.7)
Household agent *(Bleach)*	-	1	-	-	-	1 (2.2)
Total	3	27	8	5	2	45 (100.0)

Table III

Mortality according to the Type of Poison ingested

Poison	*No. of Cases*	*No. of Deaths*	*% of Total*
Kerosene	26	3	6.7
Alcohol	10	1	2.2
Caustic soda	5	5	11.1
Drugs	3	0	0
Household agent (*Bleach*)	1	0	0
Total	45	9	20

Table IV

Comparison of Proportions of Agents of Poisoning in 1984 and in the Present Study

Agents	*1984 study*	*Present Study*	*Z*	*p*
	N (%)	N (%)		
Kerosene	38 (43.7)	26 (57.8)	1.78	<0.05*
Alcohol	22 (25.3)	10 (22.2)	0.4	0.5
Drugs	15 (17.2)	3 (6.7)	1.91	0.05
Household agents (*bleach*)	12 (13.8)	1 (2.2)	2.7	<0.005*
Caustic soda	0 (0)	5 (11.1)	2.37	<0.01*
Total	87 (100)	45 (100)		

* Statistically significant

other poisons ranged between two and five days (mean three days). The complications seen in those who died included aspiration pneumonitis, pulmonary oedema, hypoglycaemia, and oesophageal stenosis due to late presentation in the hospital.

Discussion

Kerosene, alcohol and caustic soda were the three most common causes of childhood poisoning seen at the University Calabar Teaching Hospital, Calabar. Kerosene was the leading cause accounting for 57.8 percent of cases. This finding is similar to those reported from other parts of the country.[4,9,11] This pattern is also consistent with findings in black South Africans[12] and in Saudi Arabia.[13,14] In contrast however, reports from Pakistan[15], USA[16], Qatar[17] and UK[18] show that drugs were the commonest poisons in childhood.

The proportion of kerosene poisoning observed (57.8 percent) in the present study was significantly higher than the 44 percent reported from the same centre in 1984[7] but lower than 68 percent reported from Zaria in 1982.[6] The fact that kerosene tops the list of causative agents of childhood poisons may be attributable to its being readily available in virtually every home. This is because, apart from firewood, it is the most common fuel for domestic lighting and cooking. Its storage at home in places within the reach of children and in containers such as empty bottles of beer, *"Lucozade"* and soft drinks without secure covers/lids are important predisposing factors. In line with reports from Lagos,[9] Ilorin[10] and Nnewi,[11] the majority of children with kerosene poisoning were aged one to two years with a male predominance.

Alcohol was the next common cause of poisoning. It was responsible for 22.2 percent of cases, which is similar to the 25.3 percent reported by Asindi[7] in 1984, but higher than the 16 percent reported by Antia-Obong[8] from the same centre in 1992. The common types of alcohol involved were spirits (local gin, whisky and brandy), which were usually stored in re-capable bottles whose lids were already broken. These caps were

not secure and were therefore, easily opened by children. The absence of alcoholic beverages such as beer and stout in this study may be attributed to the fact that their containers have secure lids/caps, which are corked and as a result, not easily opened by children. This observation bears testimony to the need to provide secure lids for containers of household agents as a means of preventing accidental poisoning in children.

In the present study, we observed that caustic soda which was not recorded in this centre in 1984,[7] accounted for 11.1 percent of the cases, although the proportion of other poisons was generally lower than those of 1984. The emergence of caustic soda as a causative agent of childhood poisoning may be due to its use in the domestic production of low quality soap on account of the depressed economy of the nation during the period. Haloperidol, hitherto unknown as a cause of poisoning in Calabar, and bleach, were responsible for the remaining cases. The storage of haloperidol in plastic dispensing bags/envelopes, and bleach in containers without secure lid/caps, which were within the reach of children, most probably led to the accidents. It is interesting to note that the proportion of poisoning due to drug ingestion was low (6.7 percent) in the present study; it was lower than 17.2 percent reported in this centre in 1984.[7] This probably reflects an increased awareness of drugs as potential poisonous substances, and hence their storage away from the reach of children.

The case fatality rate of 100 percent in caustic soda poisoning was associated with late presentation in hospital and severe complications such as aspiration pneumonitis and oesophageal stenosis, while the deaths from kerosene poisoning were related to severe pneumonitis and oedema. The only child that died from alcohol ingestion presented in coma after ingesting a large quantity of the substance.

The fact that kerosene and alcohol were the major causes of poisoning and the observation of 100 percent mortality due to caustic soda ingestion call for intensification of health education in order to improve the health awareness of the populace. We recommend that parents or caregivers should be educated on the proper storage of these substances. Kerosene and alcohol should be placed in containers with secure cover/lids and kept away from the reach of children. The preparation of caustic soda at homes should be avoided. Child resistant containers should be provided for drugs; the practice of drug retailing should be reviewed. With regard to the management, the importance of local and regional Drug and Poison information centres cannot be overemphasized. Furthermore, there is a need to seek urgent medical attention and prompt hospitalization following a poisoning incident. Although health education is a difficult task, it appears a logical approach to the reduction of childhood morbidity and mortality from poisoning.

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