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Accidental childhood poisoning in Benin city

IN OLOMU+

Summary

Olomu IN. Accidental Childhood Poisoning in Benin City. *Nigerian Journal of Paediatrics 1992*; **19:24.** Three hundred and forty-nine cases of childhood poisoning seen at the University of Benin Teaching Hospital over a six-year period, were reviewed. These cases accounted for 2.5 percent of the total admissions into the children's wards during the period. The mean age of the children was 36 months (range: two months to 15 years). Males were more frequently involved than females (M:F = 1.6:1). Volatile hydrocarbons and alcohol were the predominant agents encountered, accounting for 43.8 percent and 32.7 percent of the total, respectively. A majority (90.2 percent) of the children who ingested hydrocarbons were below three years of age, while 82.4 percent of those who ingested alcohol were above three years of age ($P<0.001$). There were five cases of petrol poisoning in the series. Chemical pneumonities and coma were the commonest complications of hydrocarbon and alcohol poisoning, respectively. The overall mortality was 2.56 percent. It is concluded that storage of household goods, alcohol and drugs in child-resistant containers will reduce the high morbidity and mortality from childhood poisoning in developing countries, as has happened in industrialized nations.

Introduction

ACCIDENTAL poisoning is an important cause of childhood mortality and morbidity in industrialized countries.[1] Accidental poisoning also contributes to the high morbidity and mortality among children in the non-industrialized and developing countries, but communicable diseases and malnutrition remain the predominant childhood problems.[2] However, the pattern of poisoning in developed countries is known to be different from that in the developing world.[3 4] Furthermore, regional differences exist within the same country.[5 6] With the above facts in mind, the present retrospective study was undertaken to review the prevalence and pattern of accidental childhood poisoning at the University of Benin teaching Hospital (UBTH), where there has been no previous study of this important childhood problem.

College of Health Sciences, University of Benin

Department of Child Health
\+ Lecturer

Correspondence: IN Olomu

Patients and Methods

The ward records of admissions, deaths, mortality reviews and case notes of all children admitted into the children's wards, UBTH,

during a six-year period (January 1981 to December 1986), for accidental poisoning were reviewed. Children suffering from the effects of drugs, or traditional preparations administered deliberately to them by parents, or traditional healers, were excluded from the study. The data extracted from the records included the age, sex, date of admission, the poisoning substance, clinical features and complications. The treatment given at home, in the hospital and the outcome of hospital treatment were also noted. Statistical analysis was done, using the Chi-quared test.

Results

During the six-year period of the present study, 13,871 patients were admitted into the children's wards, UBTH. Of these, 349 (2.5 percent) were cases of accidental poisoning. Table I shows the yearly admissions and types of poisons that were involved. It will be observed that poisoning accounted for between 1.4 and 4.2 percent of the yearly admissions. It is also evident that volatile hydrocarbons (kerosine and petrol) and alcohol poisoning accounted for 267 (76.50 percent) of the 349

Table I

Number of yearly admissions and types of poisoning substances

Year	Total Admission	Poisoning substances				Nº of patients	Percent of total
		Hydro-carbon	Alcohol	Drug	Household agents		
1981	2173	33	26	17	5	81	3.7
1982	2339	37	42	16	4	99	4.2
1983	2002	31	15	3	1	50	2.5
1984	2461	11	9	10	4	34	1.4
1985	2390	17	15	8	5	45	1.9
1986	2506	24	7	5	4	40	1.6
Total	13871	153	114	59	23	349	2.5

Table II

Types of poisons and age distribution of patients

Substance	Age (years)							Total No of patients
	0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 9	9 - 14	
Hydrocarbon	5	108	25	7	4	4	0	153
Alcohol	0	6	14	32	17	37	8	114
Drugs	4	11	22	8	6	4	4	59
Other household goods	0	9	3	3	2	5	1	23
Total	9	134	64	50	29	50	13	349

cases. Table II shows the age distribution and the different types of poisons. The age ranged from two months to 15 years and 207 (59.3 percent) of the patients were below three years of age; 138 (90.2 percent) of the 153 patients who ingested hydrocarbons were also three years of age, while 894 (82.5 percent) of 114 patients that ingested alcohol were older than three years of age ($X^2 = 14.2$, $P<0.001$). There were 215 (61.6 percent) male patients and 134 (38.4 percent) females (Table III), a male : female ratio of 1.6:1.0($X^2 = 37.6$ $P<0.001$).

Volatile hydrocarbons (Table I) accounting for 153 (43.8 percent) of the cases, were the commonest poisons involved in the present series. The patients presented with a history of accidental ingestion of either kerosine or petrol, although the quantity ingested was, in every case, unknown. Varying degrees of respiratory distress were present in 103 (67.3 percent) of the 153 cases, while fever (temp $\geq 38^{\circ}c$) occurred in 87 (56.9 percent) of the cases. There was radiographic evidence of pneumonities in 91 (59.5 percent) of these cases. There were five deaths (1.43 percent) of the 349 cases. Alcohol was the next common poison, occurring in 114 (32.7 percent) of the total. Ninety-three (81.6 percent) of these alcoholic poisoning were in coma on admission; five (4.4 percent) developed convulsions before, or during admission. Random blood sugar estimation revealed a level below 40mg/dl in eight (7.0 percent) patients. Most of the pa-

Table III

Types of Poisons and sex distribution of patients

Poison	Sex		Total No of patients	Percent of total
	Male	Female		
Hydrocarbon	98	55	153	43.8
Alcohol	67	47	114	32.7
Drugs	34	25	59	16.9
Household materials	16	7	23	6.6
Total	215	134	349	100

tients 101 (88.6 percent) ingested the locally distilled gin called "Ogogoro". Death occurred in two (0.57 percent) of the 349 cases. Drugs accounted for 59 (16.90 percent) of the total and comprised aspirin in seven cases (2.0 percent), sedatives (sonery1, phenobarbitone, largactil and valium) and purgative (Epsom salt, or magnesium sulphate and vagal star) in eight patients (2.3 percent) each. Other drugs that were ingested included, salbutamol, chloroquine, antihelminthics, antibiotics and antihistamines. Three of the seven children with aspirin poisoning presented with hyperpyrexia, restlessness and acidotic type of breathing. One of these patients died. Drowsiness was the main presentation of those who ingested the sedatives. There were 23 cases (6.6 percent) of poisoning with household agents, comprising gammalin, caustic soda, bleach, revlon hair relaxer, dettol and "Omo" detergent. Except two patients, these children were completely asymptomatic. The two patients, aged six and eight years, respectively, ingested gammalin; both presented with severe respiratory depression and coma and one of them died.

Fifty-nine patients (17.0 percent) received some kind of treatment at home before being brought to the hospital. The treatment consisted of oral administration of palm-oil in 48 cases, palm-kernel oil in nine other cases and milk in two cases. The average interval between the accident and arrival at the hospital was seven hours (range : 45 minutes to 72 hours). The treatment given in the hospital comprised gastric lavage with 0.9 percent saline solution in 107 (54.6 percent) of 196 patients with non-hydrocarbon poisoning and intravenous infusion with 10 percent dextrose solution in 81 (71.0 percent) of those who ingested alcohol. Of the 153 patients with hydrocarbon poisoning, 111 (72.5 percent) received antibiotics (ampicillin, either alone, or with cloxacillin) and intravenous solution of 4.3 percent dextrose in 0.18 percent saline, was administered as well to 83 (54.2 percent) of the 153 patients. Other supportive treatment given to patients with severe respiratory distress, included humidified oxygen by face mask and intravenous hydrocortisone.

The overall mortality was nine (2.56 percent) deaths out of the 349 patients. The highest mortality occurred in five patients (1.43 percent) with hydrocarbon poisoning; this was followed by two deaths (0.57 percent) among the alcohol poisoning and one death each for aspirin and gammalin poisoning.

Discussion

In the present study, childhood poisoning accounted for 2.5 percent of the total admissions into the paediatric medical wards, UBTH. This figure is higher than those from Uganda[7] and from elsewhere in Nigeria;[8,9] it is, however, lower than the 5.3 percent reported from Riyadh, Saudi Arabia.[10] In the present series, 82 percent of the patients were under five years of age. This is in agreement with reports by other workers.[7] Of the 18 percent of the children who were above five years, 71.4 percent ingested alcohol, 6.3 percent ingested drugs, while 9.5 percent ingested other household agents. As reported from most other developing countries,[11] kerosine was the commonest poisoning substance identified in our series. By contrast, drugs accounted for most instances of accidental poisoning in developed countries.[4,12] The morbidity among the children who ingested kerosine was not different from that previously reported in the literature.[11] It is worth noting that all the deaths from kerosine poisoning occurred in infants who had vomited at home before presenting in hospital. The small size of the airways in these infants and the likelihood that they aspirated some quantity of kerosine during the process of vomiting, could have contributed to the mortality..

In the present series, five children ingested petrol which had been kept at home by their fathers who were professional automobile drivers. One of these five children, an 18-month old female, died. It is noteworthy that no previous studies from Nigeria [2 5 6 8] reported any case of petrol poisoning. In the series reported by Mahdi, Taha and Rifai [10] from Saudi Arabia, there was one case each of petroleum and diesel poisoning and neither of them died. There is a need for public awareness of the dangers of keeping petroleum products at home. Apart from accidental poisoning, there is the fire hazard.

Alcohol is a frequently encountered poisoning agent in both developed and developing countries and often this results in fatalities.[4 5] Two of the 114 children who ingested alcohol in the present series, died; one other child who presented with coma, repeated convulsions and intractable hypoglycaemia, developed severe and permanent neurologic deficits. All these children ingested the locally-distilled "Ogogoro" which is commonly kept in soft-drink bottles, such as FANTA bottle and stored in places that are easily accessible to children. Moreover, some parents, not uncommonly allow their very young children to have sips of "Ogogoro" while they themselves are drinking it. This practice, no doubt, tends to heighten the curiosity of such children and tempt them to take larger quantities in the absence of the parents. It is noteworthy that alcohol poisoning was not recorded in the reports from Zaria,[6] or from Ilorin,[9] while it was the second commonest form of poisoning reported from Calabar.[8] Although aspirin poisoning accounted for only two percent of the cases of poisoning in the present study, it is nonetheless, significant as one of the children died. Drugs accounted for about 17 percent of the cases of poisoning and this is much lower than the 45 percent reported from the USA,[12] where, like in most other developed countries, medicinal substances, especially salicylate and tranquillizers, are much more commonly encountered than house chemicals.

Mahdi, Taba and Rifai [10] have reported that the pattern of childhood poisoning encountered in Saudi Arabia was changing from that usually reported from developing countries, where household goods are the most common agents, to that seen in the industrialized countries, where drugs are the predominant agents encountered. This observation would suggest that improvements in the socio-economic conditions and in living standards are important in reducing the incidence of accidental childhood poisoning from household agents.

In the present series, childhood poisoning contributed 2.5 percent of all the admissions into the paediatric medical wards. This figure is likely to increase as the incidence and prevalence of infections and malnutrition is reduced by improvements in the socio-economic situation and by primary health care programmes, especially childhood immunization and oral rehydration therapy. Therefore, widespread public health education on the safekeeping of drugs, alcohol and dangerous household items such as kerosine and insecticides, might reduce the incidence of childhood poisoning in the locality. However, it should be noted that health education through the mass media and even by personal contacts, has not been found to be very effective, but leads only to a slow and limited success in reducing the incidence of childhood poisoning.[4-6] By contrast, the packaging of potentially hazardous drugs and household products in child-resistant containers, has led to a sharp decline in the mortality and morbidity from accidental childhood poisoning in the United Kingdom.[4 13] It is therefore, recommended that governments in developing countries should adopt the use of child-resistant containers for dispensing drugs, alcoholic beverages and petroleum products, in order to reduce the high childhood morbidity and mortality from these substances.

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