PATTERNS OF ACCIDENTAL POISONING IN CHILDREN IN JEDDAH, SAUDI ARABIA

Abed M. Al Hazmi, ABPed

Childhood poisoning is a universal problem which is usually accidental, and is associated with low morbidity and mortality.[1-3] Observations of accidental child poisoning from different regions of Saudi Arabia, with the exception of Jeddah, have been reported.[4-8] The purpose of this study was to determine the pattern of accidental poisoning in children reporting to the King Abdulaziz Hospital (KAH) in Jeddah. Attempts were made to determine related morbidity and mortality in affected children and to recommend strategies for prevention of accidental poisoning in children.

Patients and Methods

Children up to 12 years of age reporting to the Emergency Department (ED) of KAH and admitted to the Pediatric Unit or the Intensive Care Unit (ICU) during the time period of January 1994 to December 1996 were enrolled in the study. An open-ended questionnaire was administered in each case to obtain data, which included age, gender and preliminary diagnosis. Further information was obtained on the type of poison, source of poison, time of ingestion, time of seeking medical attention, clinical symptoms, duration of hospital admission and outcome in those children known to be suffering from accidental poisoning.

Results

A total of 1954 children were admitted to the Medical Pediatric Unit during the study period. Of these, 140 (7.2%) reported ingestion of toxic materials with or without symptoms of intoxication. A slight downward trend in the incidence of childhood poisoning was apparent over the three-year study period, as noted by the 51, 49 and 40 cases presenting in 1994, 1995 and 1996, respectively. The highest percentage of poisoning was in the 2-5-year age group (61%), as compared to 27% in 0-2, 9% in 5-10, and 3% in the 10-12-year age groups. The male:female ratio of the 140 children was 1.4:1. This ratio remained quite constant in the three age groups below 10 years and increased sharply to 3:1 in the oldest (10-12 years) age group.

Table 1 illustrates the types of poisons identified in the 140 accidental child poisoning cases. Hydrocarbon ingestion accounted for the highest proportion of poisonings (56 cases, or 40%), followed by drugs in 48 cases (34.3%), and household chemicals in 23 cases (16%). Bleach—sodium hypochlorite, Chlorox—was identified as the causative agent in 11 (7.9%) of the cases, and rat poison (warfarin) and insecticides were observed in 8 children (5.7%). No information on the nature of the toxic substance ingested was available in 5 children (3.6%) presenting with symptoms of accidental poisoning.

Children ingesting pharmaceuticals were generally required to stay in hospital for only short periods. Of the 48 children with accidental drug ingestion, 30 (62.5%) were hospitalized overnight for observation, 38 (71.9%) stayed less than 48 hours, and all were discharged within 72 hours. Six children who had taken anticonvulsant drugs presented with symptoms of drowsiness, somnolescence and dizziness. Another six (12.5%) who ingested anti-histamines presented with drowsiness and sleepiness. Ingestion of antiemetics (metoclopramide) resulted in manifestations of oculogyric crisis in 5 children (10.4%) in this group. Antipsychotic drugs, mainly hypnotics and sedatives, were ingested by 5 children (10.4%), antibiotics by 3 (6.2%), antidepressants, paracetamol, iron and corticosteroids in each of 3 children (6.2%), all of whom presented with only mild symptoms of intoxication upon arrival at the ED.

Of the 56 children with hydrocarbon intoxication, 54 reported having consumed kerosene. Of these, only 22 (40.7%) had mild symptoms, such as drowsiness, cough, vomiting, and tachypnea. Another 19 children (35.2%) developed pneumonic changes with respiratory distress, and these symptoms were further accompanied by fever in a group of 15 children (27.7%). The latter two groups stayed in the hospital for more than three days.

It was determined that half of the 22 children admitted for ingesting household chemicals had consumed bleach. Of these 11 children, 9 had hyperemia with mild circumferential burns. These symptoms were sufficiently

From the Department of Pediatrics, King Abdulaziz University, Jeddah, Saudi Arabia.

Address reprint requests and correspondence to Dr. Al Hazmi: Department of Pediatrics, King Abdulaziz University, P.O. Box 9776, Jeddah 21423, Saudi Arabia.

Accepted for publication 17 May 1998. Received 10 March 1998.

TABLE 1. *Substances ingested leading to a poisoning episode.*

	Number
Medicinal	
Anticonvulsant	6 (4.3%)
Antihistamines and decongestants	6 (4.3%)
Antipsychotic	5 (3.6%)
Antiemetics (metoclopramide)	5 (3.6%)
Antibiotics	3 (2.1%)
Antidepressants	3 (2.1%)
Paracetamol	3 (2.1%)
Non-narcotic analgesics	3 (2.1%)
Anti-cholinergics	3 (2.1%)
Corticosteroids	3 (2.1%)
Iron	3 (2.1%)
Cardiac drugs	2 (1.4%)
Antimalaria	1 (0.7%)
Contraceptives	1 (0.7%)
Unknown	1 (0.7%)
Nonmedicinal	
Hydrocarbons	
Kerosene	54 (38.6%)
Thinner	1. (0.7%)
Benzene	1 (0.7%)
House items	
Bleach (hypochlorite, Clorox)	11 (7.9%)
Cleaning soap and soap additives	12 (8.6%)
Chemicals	
Insecticides	5 (3.6%)
Rat poison	3 (2.1%)
Others	5 (3.6%)

severe to require hospitalization for five days. Two children under two years of age who suffered severe burns of the oral cavity and some degree of esophageal stricture as a result of exposure to bleach were kept in hospital for 10 days and followed up thereafter in the Pediatric Surgery clinic. The 12 children who ingested soap and cleansers developed only mild symptoms such as vomiting, nausea and abdominal pain and were kept in the hospital for less than 48 hours.

Of the 8 children (5.7%) ingesting chemicals, five who had taken rat poison were asymptomatic. The remaining three who had ingested organophosphate insecticides presented with typical cholinergic symptoms, including mild gastrointestinal disturbances, increased bronchial secretions, coughing, sweating, salivation, lacrimation and miosis. Children thus exposed received appropriate medical treatment and were discharged within four days of admission. Information regarding the nature of the toxic material ingested was not available for five children, but fortunately none of them showed any signs or symptoms of poisoning. Most of the families (69%) of children who ingested hydrocarbons, pesticides and household chemicals sought medical assistance within two hours, but the remainder (31%) waited as long as four hours before taking the affected child to the ED. Families of children who accidentally ingested drugs typically waited to seek medical care later. In drug ingestion cases, 25.8% presented in the first 2 hours, 36.4% between 4 and 6 hours, and 37.8% waited for 6 to 8 hours before seeking medical attention.

All children had follow-up in the Pediatric Clinic in the six months post-ingestion period, and no residual symptoms were observed except in two cases. These two children who ingested household bleach developed esophophageal stricture and continued to have some degree of difficulty in swallowing, and were subsequently referred to the Pediatric Surgery clinic for treatment.

Discussion

The data in this prospective study gives the experience of accidental child poisoning presenting at the ED at KAH, a general hospital providing medical services mainly to the population of southern Jeddah. Ingestion of toxic substances is a universal problem in children due to their inherent curiosity and continues to be a major challenge in public health. Childhood poisoning is preventable through appropriate education, and judicious storage of drugs and household chemicals[9] can serve to reduce or eliminate the incidence of accidental ingestion of toxic materials in the home environment.

In the present investigation, poisoning accounted for 7.2% of hospital admissions to the pediatric department for the selected three-year period. The incidence of accidental childhood poisoning is quite high, compared with similar studies conducted in the USA,[1,10] UK,[2] different areas of Saudi Arabia,[4,6] and the neighboring Gulf countries, such as Iraq[11] and Qatar.[3]

The highest incidence of accidental poisoning was observed in children less than five years old (87.8%), with a male:female ratio of 1.4:1. This overall pattern appears consistent with previous reports on accidental childhood poisoning.[2-6] In this study, hydrocarbon ingestion was the most common finding, followed by drugs, household chemicals and pesticides. While these findings are in agreement with another study conducted in Saudi Arabia, [7] they contrast with data from other studies from Tabuk, Riyadh, USA, Qatar, and the UK, [1-3,4,6] in which drugs are reported as the principal offenders. Joubert, in his study of black South Africans,[12] similarly noted that kerosene accounted for most (59%) acute poisoning, followed by traditional medicines (15.8%). Although use of traditional medicine is widespread in Saudi Arabia, none of the cases reported here had ingested such substances. In the present study, overexposure to hydrocarbons and household chemicals led to a marked incidence in severity of symptoms and duration of hospital stays. Of the 54 cases of kerosene ingestion, 34 (63%) developed pneumonic changes and respiratory distress, requiring hospitalization for more than one week. Bleach intoxication accounted for 11 cases (7.9%). Two such patients in this category developed burns in the oral cavity and esophageal stricture, necessitating treatment for more than a week, and another nine patients had only mild symptoms that improved within five days. Ingestion of bleach reported here appears significantly higher, compared with previous studies. [4]

Children ingesting medications generally experienced only mild symptoms and, therefore, presented for medical attention later, in most cases (75%) more than two hours after ingestion. The mild symptoms noted with ingestion of medications may be related to the dose of drug ingested, induction of emesis and the type of drugs taken. These observations contrast with the results of studies conducted in Qatar, where 17.8% had severe symptoms, and 51.7% had mild to moderate symptoms.[3] In this study, there was no mortality. This contrasts with other studies where mortality was reported as 1.5%[4] and 4.6%.[12] It is significant that none of the drugs accidentally ingested were dispensed in childproof containers. This observation points out the urgency of implementing the nationwide use of child-proof drug prescription bottles, in order to eliminate or reduce accidental childhood drug poisoning in Saudi Arabia. The 5 children (3.6%) ingesting antiemetics (metoclopramide) had previous symptoms of gastroenteritis with vomiting, which effectively removed the responsible agent, making further treatment unnecessary.

Mental trauma to poisoned children, and accompanying anxiety to their parents, can be reduced by appropriate public education on safe practices of storing medications and toxic household chemicals.[9] This type of education could be delivered to the family by the physician during visits to the Well Baby clinic. Lastly, the strict regulation of secure packaging and prescribing of all medications in small amounts and in childproof containers must be enforced to prevent accidental childhood poisoning.

References

1. Litoviz TL, Baily KM, Schmitz B F, et al. 1990 Annual Report of the American Association of Poison Control Centers' Data Collection System. Am J Emerg Med 1991;9:461-509.
2. Lawson GR, Graft AW, Jackson RH. Changing pattern of poisoning in Newcastle, 1974-81. BMJ 1983;287:15-7.
3. Dawod ST, Genelin RS, Asfoura EG. Accidental poisoning of children in Qatar. Ann Saudi Med 1989;9:243-6.
4. Al Hifze IS, Kuman P, Talol W. Hospitalization due to acute poisoning in children: Tabouk Experience. J Fam Comm Med 1995;2:27-30.
5. Mahdi AH, Taha SA, Al-Rifai MR. Epidemiology of accidental home poisoning in Riyadh (Saudi Arabia). J Epidemiol Community Health 1983;37:291-5.
6. Khalil AHA. Accidental poisoning in Saudi children seen at Riyadh Al-Kharj Military Hospitals. Saudi Med J 1986;7:613-7.
7. El Mouzan MI, Elajeb A, Ali NK. Accidental poisoning of children in the Eastern Province. Saudi Med J 1986; 7:231-6.
8. Pejaves KR, Griffin S, Maistry M. Acute poisoning in children. Practitioner 1995;6:243-5.
9. Lovejoy FH Jr, Robertson WO, Wolf AD. Poisoning prevention and the pediatrician. Pediatrics 1994;94:220-4.
10. Litovitz TL, Manogurra A. Comparison of pediatric poisoning hazards on analysis of 3.8 million exposure incidents: a report from the American Association of Poison Control Centers. Pediatric 1992;89:999-1006.
11. Naji NA, Abdukkah ZA. Kerosene poisoning in children in Iraq. Postgrad Med J 1995;71:419-2.
12. Joubert PH. Poisoning admissions of black South Africans. J Toxicol Clin Toxicol 1990;28:85-94.
13. Pearn J, Nixon J, Ansford A, Corcoran A. Accidental poisoning in childhood: five years' urban population study with a 15-year analysis of fatality. BMJ 1984;288:44-6.