RESEARCH ARTICLE

POISONING IN CHILDREN: EXPERIENCE AT A TERTIARY CARE HOSPITAL IN MANGALORE

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ABSTRACT

Background: Acute poisoning in children is a major preventable cause of morbidity and mortality. The accessibility of different poisonous substances also depends upon demography, social beliefs and customs, education, economic status of family as well as the ease of availability.

Aims & Objectives: This retrospective study analyses the clinical profile of poisoning patients admitted in Fr. Muller Medical College Hospital Mangalore.

Materials and Methods: Hospital records of all children < 15 years, admitted with a diagnosis of acute poisoning between January 2010 and July 2012 were included. Patients with poisonous bites and stings were excluded. The results were analysed statistically by percentage, Fischer exact test (p value).

Results: A total of 56 children were included. Types of poisoning: kerosene (21.4%), rat poison (16.07%), organophosphorous Poison (7.14%), pyrethroids (12.5%), others (37.5%) which included medications and fertilizers and unknown substances in 5.35%. Kerosene poisoning was more common in < 1 year whereas rat poison was between 1 and 5 year of age. There was no significant difference between the sexes in relation to type of poisoning except for kerosene poisoning which was significantly higher in males. Though majority was accidental, 5 cases involving adolescents were suicidal. Vomiting, drowsiness, unconsciousness, pain abdomen, convulsions, and shock were the presenting symptoms. Antidotes were available only in 4 cases. 55 cases survived and one patient succumbed (Zinc Phosphide).

Conclusion: The study highlights the pattern of poisoning in this area. Increasing the awareness and proper preventive measures go a long way in decreasing poisoning in children.

Key Words: Poisoning; Children; Vomiting; Drowsiness; Kerosene

Introduction

Acute poisoning in children is a major preventable cause of morbidity and mortality. It is a world-wide problem, although the nature of poison consumed may vary in developed and underdeveloped countries, due to variable accessibility. Children are curious and explore their world with all their senses, including taste. As a result, the home and its surroundings too can be a dangerous place. The accessibility of different poisonous substances also depends upon demography, social beliefs, customs, education, economic status of family as well as the ease of availability of pharmaceuticals and drugs. The majority of poisonings involving young children are classified as unintentional. In contrast, approximately one-half of poisoning exposures involving teenagers are intentional.[1] Poisoning exposure typically causes minor symptoms in young children; death is a relatively rare occurrence. The incidence of poisoning is increasing among children – probably attributed to nuclear families, attractive containers, less supervision, and ignorance about numerous new products.

Mangalore is a rapidly growing city in the coastal region of Karnataka, India. The purpose of this study was to retrospectively analyze all pediatric patients, admitted with a clinical diagnosis of acute poisoning, to determine the profile and outcome of poisoning, in this region.

Materials and Methods

The study was retrospective analysis of the hospital records of all children up to the age of 15 years, admitted with a diagnosis of acute poisoning between January 2010 and July 2012. The analysis focused on age, sex, nature of poison, and outcome. Outcome was studied in terms of whether patient survived or died. Patients with idiosyncratic drug reactions were excluded from the study, as were patients with poisonous bites and stings. The results were analysed statistically by percentage, Fischer exact test (p value).

Results

A total of 56 children were admitted with a clinical diagnosis of acute poisoning, during the study period between January 2010 and July 2012. Majority of the cases belonged to age less than 5 years. Kerosene poisoning was more common in children less than 1 year, and poisoning due to rat poison, others and unknown substances were more common in older children which

is statistically significant. Kerosene poisoning was higher in male children, however there was no statistical significant difference between the sexes concerning type of poisoning. Most common symptom in poisoning children observed in our hospital was vomiting and drowsiness which was statistically significant. Most of the children were symptomatically managed and only in 4 cases, antidotes were used. Most of the children with poisoning had recovered, with only 1 death due to zinc phosphide poisoning.

Table-1: Distribution of cases according to poison consumed

Substance consumed	Number of cases	%
Kerosene	12	21.4
Rat poison	9	12.5
Organophosphorus	4	16.1
Pyrethroids	7	7.1
Others	21	37.5
Unknown	3	5.4
Total	56	100

The category "others" included medications and agro-chemicals other than organophosphorus. Out of the known substances, kerosene accounted for highest incidence.

Table-2: Distribution of cases according to age

Age group (Years)	Substances Consumed					
	Kerosene	Rat poison	OP	Pyrethroids	Others	Unknown
<1	6 (50%)	1 (8.3%)	0	3 (25%)	2 (16.7%)	0
1-5	6 (20.7%)	5 (17.2%)	2 (6.9%)	4 (13.8%)	11 (37.9%)	1 (3.4%)
5-10	0	2 (33.3%)	0	0	3 (50%)	1 (16.7%)
10-15	0	1 (11.1%)	2 (22.2%)	0	5 (55.6%)	1 (11.1%)
Total	12	9	4	7	21	3

P value – 0.039, Significant

Table-3: Distribution of cases according to sex

Sex	Kerosene	Rat poison	OP	Pyrethroids	Others	Unknown
Male	10 (31.3%)	4 (12.5%)	2 (6.3%)	6 (18.8%)	9 (28.1%)	1 (3.1%)
Female	2 (8.3%)	5 (20.8%)	2 (8.3%)	1 (4.2%)	12 (50%)	2 (8.3%)
Total	12	9	4	7	21	3

P value - 0.090, Not significant

Table-4 :Common symptoms in patients with poisoning

Symptoms	Number	%
Vomiting	15	26.8
Drowsiness	10	17.9
Unconsciousness	2	3.6
Pain abdomen	2	3.6
Convulsions	1	1.8
Shock	1	1.8

Chi Square - 13.5, p value- 0.004, HS

Discussion

Poisoning among children is one of the common medical emergencies encountered in pediatric practice. Poisoning has become more important, probably because of reduction in infection related causes. Rapid industrialization and exposure to hazardous chemical products, introduction of newer range of drugs for treatment, massive use of pesticides in agriculture, increased alcohol consumption, unhealthy dietary habits etc. has widened the spectrum of toxic products, to which people are exposed. Children are particularly at risk, because of their curious and explorative behavior, and hand to mouth activities. Playing close to the ground magnifies exposure of children to toxins. By 2-3 years of age, the child's motility and ingenuity allows him to access any unlocked drawer or cupboard at home. The greater permeability of infant skin increases absorption of chemicals. Children also differ in their ability to metabolize toxins, and may be more susceptible to the effects of poisons in the environment.

Most studies from India and abroad show a male preponderance in childhood poisoning.[2-4] Exceptions are a study from Ankara and one from Trinidad.[5,6] Pediatric poisoning, as noted in the present study, is predominantly accidental in nature – though suicidal cases were also noted amongst adolescents. The reasons cited were medication errors, improper storage of poisonous products and look-alike packing. This is in contrast to poisoning in adults where most of the cases have been noted to be suicidal.

Indian studies implicate kerosene followed by drugs as the most frequently encountered poisons in pediatric cases. Singh *et al* studied pattern of pediatric poisoning in a large north Indian tertiary care centre, and observed a significant decline in kerosene poisoning in the decade 1980-89 compared to 1970-79.[7]

Comparative data has revealed that while poisoning in developed countries is mostly due to common household products, in developing countries like ours, it is due to toxic substances, which should not have been accessible to children in the first place. This is the reason that poisoning is the fourth most common cause of mortality especially in rural India. This calls for formulation of preventive strategies to reduce the burden of poisoning related morbidity/ mortality. These may take the form of health education, improved living conditions, use of child resistant containers for drugs, safer storage of chemicals in household, strengthening of the Pesticide Act, reducing stress at school and providing counselling for adolescents.

Conclusion

In conclusion, poisoning in this area is mainly accidental

in children due to easily accessible substances and high index of suspicion is required in children presenting with acute onset of vomiting and drowsiness. Early initiation of treatment may reduce the mortality. Most common cause of poisoning was kerosene.

References

1. Bronstein AC, Spyker DA, Cantilena LR Jr, Green JL, Rumack BH, Giffin SL. 2009 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 27th Annual Report. Clin Toxicol (Phila) 2010; 48:979 - 1178.
2. Kohli U, Kuttiat VS, Lodha R, Kabra SK. Profile of Childhood Poisoning at a Tertiary Care Centre in North India. Indian J Pediatr 2008;75:791-4.
3. Adejuyigbe EA, Onayade AA, Senbanjo IO, Oseni SE. Childhood poisoning at the Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria. Niger J Med 2002;11:183-6.
4. Oguche S, Bukbuk DN, Watila IM. Pattern of hospital admissions of children with poisoning in the Sudano-Sahelian North eastern Nigeria. Niger J Clin Pract 2007;10:111-5.
5. Andiran N, Sarikayalar F. Pattern of acute poisonings in childhood in Ankara: what has changed in twenty years? Turk J Pediatr 2004;46:147-52.
6. Pillai GK, Boland K, Jagdeo S, Persad K. Acute poisoning in children. Cases hospitalized during a three-year period in Trinidad. West Indian Med J 2004;53:50-4.
7. Singh S, Singhi S, Sood NK, Kumar L, Walia BNS. Changing pattern of childhood poisoning (1970-1989): Experience of large North Indian hospital. Indian Pediatr 1995;32:333-6.

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