

Profile of Childhood Poisoning At A Tertiary Care Centre in North East India.

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Abstract:

Introduction: Poisoning is a pediatric emergency. The profile and outcome of poisoned pediatric patients in a given region is influenced by the prevalent social, economic and cultural practices prevalent and also by the availability and the quality of the medical facilities. Acute poisoning in children is common and in many cases it is preventable. Most of the research papers are at least a decade old so this study was conducted at GMCH, Pediatric Department.

Methods: We retrospectively reviewed the last 2 year (Jan, 2015 to Dec, 2016) hospital records of Pediatric department to analyze the profile of all cases of pediatric poisoning and their outcome.

Results: It was found that of the total 9862 cases, 179 cases of poisoning were admitted with an incidence of 1.81%. The majority of our patients (74.30%) were in the 1-5 yr age group. Almost all (98.88%) of our cases were accidental in nature. Kerosene (40.22%), organophosphates (9.49%) and Dhatura (8.93%) were the substances most frequently implicated in poisoning. Overall survival was 78.21%, among remaining cases 0.55% cases died in hospital and 21.2% cases left against medical advice.

Conclusion: In conclusion, kerosene is the commonest agent involved in childhood poisoning. Overall, the outcome is good with 78.21% survival in our hospital. The time gap between the poisoning and presentation to hospital greatly predicts the outcome.

Keywords: Poisoning, North East India, Children, and Gauhati Medical College and Hospital.

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Introduction

Poisoning is a Pediatric Emergency, and a thorough knowledge about the nature and magnitude of the problem, especially when associated with regional peculiarities is necessary. Profile and outcome of poisoned pediatric patients in a given region is influenced by the prevalent social, economic and cultural practices prevalent and also by the availability and the quality of the medical facilities. Many studies from the developed countries show that common household products, rather than pharmaceuticals, are now implicated in the majority of pediatric poisonings^{1,2}. More than 90.0% of toxic exposures in children occur in the home and most involve only a single substance. According to World Health Organization, more than three million poisonings occur in developing countries, particularly among agricultural workers³. Ingestion is the most common route of poisoning exposure accounting for 70.0% cases, with the dermal, ophthalmic and inhalation routes each occurring in about 6.0% cases⁴. Acute poisoning in children is common and in many cases it is preventable^{4,5}. The very nature of a young child to explore the surrounding environment predisposes the child for poisoning. Studies from India that describe the profile of poisoned pediatric patients from various regions, most of them are at least a decade old⁶. We carried out this study in the pediatric department of a tertiary care centre at Guwahati Medical College and Hospital, with the aim of determining the profile and outcome of pediatric patients presenting with acute poisoning.

II. Materials And Methods

We retrospectively reviewed the last 2 year (Jan, 2015 to Dec, 2016) hospital records of pediatric department to analyze the profile of all cases of pediatric poisoning and their outcome. All poisoning patients at our center are registered, and their records are scrupulously stored in the medical records section of our hospital. All cases age < 12 years with definite history of poisoning were included. Data regarding age, sex, type of residence, type and quantity of substance(s) consumed, time of ingestion, nature of ingestion, time of symptom onset, time of presentation to pediatric emergency, symptoms and signs, investigations, diagnostic and therapeutic interventions, and outcome was noted on a predesigned questionnaire.

All the data from the duly filled questionnaires was transferred to a Microsoft excel spreadsheet. We analyzed the data using Microsoft excel.

III. Results

According to the study conducted during the last 2years it was found that of the total 9862 cases, 179 cases of poisoning were admitted with an incidence of 1.81%. It was found that 122 of the 179 cases were boys and 57 cases were girls constituting 68.15% and 31.85% respectively. It was found that 59% of patients were from urban background while 41% were from rural background. The majority of our patients (74.30%) were in the 1-5 yr age group while infants and 5-10yrs old accounted for only 4.46% and 13.4% of our patients, respectively. The general profile has been shown in Table 1.

Table 1: General Profile

Division according to sex		
Sex	Total cases (179)	Percentage
Boys	122	68.15%
Girls	57	31.85%
Division according to Age		
Age group	Total cases (179)	Percentage
<1yrs	8	4.46%
1-5yrs	133	74.30%
5-10yrs	24	13.4%
10-12yrs	14	7.8%

Median time of presentation to the pediatric emergency for our patients was 2.5 hr. (Range=0.1- 48 hr). The median time to presentation was slightly larger for rural patients (4.5 hr) when compared to urban ones (1 hr). Almost all (98.88%) of our cases were accidental in nature. Two patients were intentionally poisoned [2 years male and 3.5 years female both were siblings who were intentionally poisoned by their mother due to monitory reasons]. None attempted suicide in our study. Oral route was the only route of exposure to poisoning substance Exposures through skin. Inhalation and injection route was nonexistent in our study. Kerosene (40.22%), organophosphates (9.49%) and Dhatura (8.93%) were the substances most frequently implicated in our patients. The drugs that were ingested included: risperidone, Clonazepam, Furadone, Paracetamol and thyroxine. Other poisons implicated were turpentine oil, mosquito repellent, diesel, soap, phenol, tobacco, gama benzene hexachloride, formaline, permethrine as shown in Table 2. There was no difference in the profile of poisoning between urban and rural setting.

Table 2: Common agents

Agents	Total cases (179)	Percentage
Kerosene	72	40.22%
Organophosphorous	17	9.49%
Dhatura	16	8.93%
Turpentine oil	9	5.02%
Mosquito Repellent	5	2.79%
Resperidone	4	2.23%
Diesel	3	1.61%
Clonazepam	2	1.11%
Soap	2	1.11%
Phenol	1	0.55%
Tobacco	1	0.55%
Gama Benzene Hexachloride	1	0.55%
Formaline	1	0.55%
Acids (Nitric Acid &HCl)	2	1.11%
Furadone	1	0.55%
Permethrine	1	0.55%
Lysol	2	1.11%
PCM	2	1.11%
Thyroxine tablets	1	0.55%
Naphthaline	2	1.11%
Unknown substance	34	18.99%

Common clinical features of poisoning are presented in Table-3. Majority of our patients developed serious symptoms like vomiting, salivation, tachypnea, crepitation in chest, diarrhea, fever, respiratory failure, abdominal pain, miosis, mydriasis, seizure and coma. The majority of our patients who were symptomatic had only a single symptom. Vomiting was the most common clinical feature followed by increased salivation and tachypnea. Coma was present in 1.1% cases and 4.46% cases had respiratory failure.

Table 3: Common Clinical Features:

No.	Clinical features	Total number of case (179)	Percentage
1.	Vomiting	75	41.9%
2.	Salivation	21	11.7%
3.	Tachypnea	17	9.5%
4.	Crepitation in chest	15	8.3%
5.	Diarrhea	9	5.02%
6.	Fever	9	5.02%
7.	Respiratory Failure	8	4.46%
8.	Abdominal Pain	7	3.9%
9.	Miosis	7	3.9%
10.	Mydriasis	6	3.35%
11.	Seizure	3	1.67%
12.	Coma	2	1.1%

Of the 179 cases majority of patients (60.89%) got discharged by 1-3 days and only 10 patients stayed for >7days in the hospital. Most of the patients who got discharged by 1-3 days were intoxicated by consuming kerosenekept for household purpose in cold drink bottle. The same has been shown in Table 4.

Table 4: Division according to Hospital stay:

Duration of stay	Total cases (179)	Percentage
<1day	22	12.29%
1-3days	109	60.89%
3-7days	38	21.22%
>7days	10	5.58%

Common complications observed in the hospital were aspiration pneumonia, respiratory failure and shock in patients with organophosphate poisoning. Of the 179 patients 33 (18.43%) patients developed complications: the various complications and their frequency is shown in the Table 5.

Table 5: Complications:

Complications	Total cases (33)	Percentage
Aspiration Pneumonia	21	63.6%
Respiratory Failure	5	15.15%
Shock	3	9.01%
Aspiration Pneumonia + Respiratory Failure	2	
Aspiration Pneumonia + Respiratory Failure + Shock	1	3.4%
Hepatitis or failure	1	3.4%

Overall survival was 78.21%. Among remaining cases, 0.55% cases died in hospital and 21.2% cases left against medical advice. Of the total 179 cases 9 were admitted in Pediatric ICU care, 3 cases had respiratory failure, 3 had shock, 2 had aspiration pneumonia with respiratory failure, 1 had aspiration pneumonia with shock who died. Of the 9 admitted cases, all the cases got discharged. The final outcome has been depicted in Table 6.

Table 6: Outcome:

Outcome	Total cases (179)	Percentage
Discharged	140	78.21%
LAMA	38	21.2%
Expired	1	0.55%

IV. Discussion

Childhood poisoning is a significant cause of morbidity and mortality in pediatric patients in our country. It is responsible for 0.33% to 7.6% of total admissions in pediatric wards at various hospitals across India. It is very likely that this reporting is an underestimate of the actual magnitude of this problem as many cases go unreported⁷. Various studies from India and abroad show that childhood poisoning is more common in males and similar pattern was observed in the present study⁵⁻⁷. Children between 1-3 yr were most commonly involved in the present study, a pattern consistent with most of the other studies⁵⁻⁷ due to the very nature of a young child predisposes the child to explore the surrounding environment. As children grow and learn to become independent, they are compelled to investigate new and interesting items, places and objects. The influence of growth and development upon unintentional poisoning becomes especially important during the toddler and preschool age⁸.

In contrast to teenagers, most cases of poisoning in children <10 yr old, are accidental in nature. This fact was reaffirmed by our data which showed that 96.9% of all our poisoning cases were accidental in nature. Only 2 patients were intentionally poisoned by mother due to monitory problems. The majority of our patients were from an urban background as our hospital is located in an urban area. The average time to presentation after consumption of the poison was 1 hr for urban patients, who presented earlier than our rural patients. This could be explained by the longer distance that these rural patients travelled to reach our centre and also by the fact that most of these patients received initial treatment at a primary health care center, before being referred to our centre.

Kerosene, drugs and insecticides, in decreasing order of frequency, were commonly implicated in our poisoned patients. Previous studies from India and adjoining regions have also shown that kerosene is the major culprit in majority of childhood poisonings^{5,7,9, 10}. Kerosene is mostly used in our country as a cooking fuel by low income families, and is frequently stored in empty soft drink bottles that are kept on the floor, within easy reach of the children. Toxicity due to drugs is also fairly common in our country⁶ as well as certain developed countries^{11,12}, because of lack of availability of child proof containers and packing, and also on account of their being stored within easy reach of children. A broad group of agents including anti-epileptics, sedatives, antihypertensives, antipsychotics and iron, were implicated in our patients.

Approximately two thirds of our patients developed symptoms after poison ingestion that ranged from trivial to severe and life threatening; the remaining one third were asymptomatic. Common symptoms noted in decreasing order of frequency were vomiting, altered sensorium, respiratory distress and seizure. While one of our patients died due to aspiration pneumonia with shock following OP poisoning, three required intubation for altered sensorium and severe respiratory distress. Our mortality was just 0.55% but still our survival rate (number of patients discharged) was less compared to other studies by due to the fact that 21.2% of patients went against medical advice to their home as most of them had consumed kerosene and were admitted to be observed for complications.

V. Conclusion

The trends for pediatric poisoning noted at our centre are not very different from those observed in hospital-based studies. Most of our patients improved with conservative management highlighting the important role of good supportive care in the management of poisoned patients. The time gap between the poisoning and presentation to hospital greatly influence the outcome.

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