Original Research :

Clinico-epidemiological Profile of Poisoning in Children Under 8 Years of Age, at Rural Medical College In West Bengal

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Abstract:

Acute poisoning and toxin exposure has become one of the most common cause of acute medical illness in many countries. Clinico-epidemiological profile of poisoning in children in a rural medical college in pediatric emergency department of a tertiary care hospital in Bankura, West Bengal from 1st July 2012 to 30th June 2013 was studied. 89 cases of accidental poisoning reported during the period representing 1% of all pediatric admissions. No case of homicidal poisoning was reported. 62 (69.66%) cases were in children between 1-3 years with male predominance. Overall mortality was 6.67%. 8.89% cases needed pediatric intensive care support. Organophosphorus poisoning remained the commonest accidental poisoning, followed by hydrocarbon and snake bite.

Key words:

Childhood poisoning, Insecticide, hydrocarbons, snake-bite

Introduction:

Childhood poisoning is a major health problem and is responsible for serious morbidity and mortality. Toxic exposure has become the most common cause of acute medical illness in many countries. Around the world approximately three million acute poisoning and 2,20,000 deaths from pesticides exposure have been reported annually. Occupational exposure to industrial chemicals and pesticides, accidental or intentional exposure to household and pharmaceutical products, changing lifestyle, use of various newer chemicals, hygiene - sanitation agents can change the pattern of poisoning. Therefore there is a need to update the knowledge about burden of poisoning among and their current trends.

Material and methods:

A prospective observational study of poisoning cases below 8 years of age, reporting to paediatric emergency services at BSMC&H from 7/1/2012 to 6/30/2013 was undertaken. Detailed history, examination and outcome were recorded. Data was collected on daily basis by one single investigator for one year six months and analysed for spectrum of poisoning, their outcome.

Results:

89 poisoning cases were admitted, constituting 1% of all paediatrics admissions. 64.04% were male and 35.96% female. 62 (69.66%) cases were between 1-3 years. Incidence of poisoning based on type of agent is presented in table-1. All cases were due to accidental ingestion of toxic substances within reach of the child. There were 39 (43.8%) cases of organophosphorus poisoning, 22 (24.7%) of hydrocarbon poisoning and 17 (19.1%) snakebites. Others were due to dhatura, diazepam tablet, naphthalene ball, bee stings, ethyl alcohol and zinc phosphide. 6 patients expired. Of them 5 cases were snakebite cases and 1 due to zinc phosphide poisoning. All deaths were

attributed to their late arrival in hospital, common in rural areas. They first go to local Ojha (Faith healer) for snake bite cases. Total survival is 83(93.25) and not survival 6 (6.75%) and p-value is <0.0001 and chi-squared value is 30.608 at degree of freedom 1 which is >3.84 at degree of freedom 1 both are statistically significant. 12 cases were due to poisonous snake bite out of total 17 snake bite cases. Out of 12 cases of poisonous snake bites, only 2 cases were due to vasculotoxic snake bite and 10 cases of neurotoxic snake bite. Among 17 snakebite cases, 5 required mechanical ventilation. They were the patients who reached late due to poor communication in rural areas and their mythic dependence on the local Ojha. There were 22 cases of hydrocarbon exposure. Out of this, only 10 (45.45%) patients developed typical signs and symptoms. This is due to less amount of kerosene or turpentine oil ingestion. 10 (45.45%) patients developed vomiting, cough and wheeze, fever, pneumonitis. 9 (40.90%) patients developed pain abdomen, 1 (4. 54%) patients developed respiratory distress and cyanosis. Out of 89 patients, 48 (53.9%) patients required gastric lavage and 41(46.1%) patients did not require the same. 54% patients developed respiratory distress and cyanosis. 25 (28.08%) had vomiting and15 (60%) of them had organophosphorus and 10(40%) cases of hydrocarbon, 19(21.34%) cases of crepitations in chest and out of 19 cases of crepitations in chest 9(47.36%) cases of organophosphorus and 10 (52.64%) had hydrocarbon poisoning. 22 (24.71%) cases had smell of hydrocarbon, 24 (26.96%) had constricted pupil. and out of this, 22 (91.66%) cases were of organophosphorus poisoning, 2 (8.34%) cases had history of snake bite, 17 (19.10%) cases were drowsy. Out of this 7 (41.17%) cases ingested organophosphorus, 9 (52.94%) cases of snake bite and 1(5.88%) had zinc phosphide. Tachypnea and tachycardia were in 17(19.10%) cases and out of this, 6 (35.29%) cases were of hydrocarbon poisoning, 8(47.05%) had snake bite and 2(11.76%) had dhatura poisoning. 12(13.40%) cases had fever. Out of them 10 (83.33%) cases were of hydrocarbon and 2 (16.67%) cases dhatura, ptosis in 10 (11.20%) cases, all due to snake bite. Wheeze was present in 10 (11.20%) cases, all in hydrocarbon cases. Pain abdomen was complained in 9 (10.11%) cases, all in hydrocarbon cases. Frothing from mouth was present in 8 (8.98%) cases. Out of this, 7 (87.5%) cases were of organophosphorus poisoning and 1 (12.5%) snake bite. Bleeding was present in 8(8.98%) of cases, all in snake bite cases. Respiratory distresses was found in 6 (6.74%) of cases. Out of this 3 (50%) were of hydrocarbon poisoning, 2 (33.33%) cases of snake bite and 1(16.66%) of zinc phosphide poisoning. Oedema was found in 6(6.74%) cases. Out of this 5 (60%) cases had snake bite and 2 (40%) cases bees stings. Bradycardia was present in 6 (6.74%) of cases, all in organophosphorus poisoning cases. Irritability was seen in 6(6.74%) cases. Out of this, 2 (33.33%) cases were having snake bite, 2 (33.33%) cases ethyl alcohol and 2 (33.33%) cases had dhatura poisoning. Cyanosis was present in 4(4.49%) cases. Out of this, 2 (60%) had organophosphorus, 1(20%) had hydrocarbon poisoning and 1 (20%) had zinc phosphide poisoning. Smell of organophosphorus compound was present in 2 (2.24%), all were of organophosphorus poisoning. 1 (1.2%) had excessive salivation in a snake bite case. Pneumonia was evident in chest X-ray in 10 (11.23%); all in hydrocarbon poisoning cases.

Table-1. Distribution of patients according to type of poisoning and area

Type of poison	Rural No (%)	Urban No (%)	Total (%)
OP	34(87.18)	5(12.82)	39(100)
HCR	15(68.18)	7(31.82)	22(100)
SB	14(82.35)	3(17.65)	17(100)
Misc	8(72.73)	3(27.27)	11(100)

Table-1 showed that poisoning occurred more in rural area than urban. Out of 89 patients 72 (81%) are from rural.

Table-2. Distribution of patient according to type of poison and season N=89.

Type of poison	Summer No (%)	Monsoon No (%)	Autumn No (%)	WinterTotal No (%)No (%)
O P	13(33.3)	19(48.7)	5(12.8)	2(5.2)39(100)
HCR	14(63.6)	6(27.3)	2(9.1)	0(0)22(100)
S B	9(52.9)	8(47.1)	0(0)	0(0)17(100)
Others	5(45.5)	2(18.2)	3(27.3)	1(9.0)11(100)

Table-2 showed that hydrocarbon poisoning were most common during summer months. Thirsty children accidentally took hydrocarbon (Kerosine) usually stored in discarded water bottles, mistaking it as portable water. Snakebites are common during summer and rainy season as snake are cold blooded animal and they go into hibernation in winter. In monsoon, they lost their place due to flood, water entering their burrows. Overall Organo-phoshorus poisoning was most common in rainy season as farmer use pesticide these days to protect crops.

Discussion:

Incidence of accidental poisoning in children from India varied from 1 to 10% of total pediatric admissions[1-6]. Incidence in present study as 1.02% is similar to the study by Singh S et al. from north India showing 1.0% incidence [1]. 69.66% children were between 1-3 year of age, with male predominance. Several previous studies also showed similar trends for age and sex, possibly being the 'Age of exploration'.[2,6,7]

Studies from different part of the world reflected regional trends. Common accidental poisoning reported from Indian studies were of household products (Common being Kerosene oil), agricultural pesticides and drugs.[3-6] The present study also showed pesticides as common accidental poison. Tarvadi PV et al 9 and Bhat NK et al 10 showed most poisoning as insecticides which matched our study. No seasonal variation in incidence of kerosene poisoning was found as has been reported in the past [8]. But in our study there is seasonal variation in kerosene poisoning, more in summer.

This study has shown that most common poisoning is organophosphorus (Insecticide). However, Kerosene the second most poisoning and snakebites being next common. In a rural area as ours, insecticides are in common use in agriculture. These are stored in houses unsecured and children can easily reach out to these substances. In our area, snakebite is not that uncommon (19.10%). Uncommon poisoning in our study were dhatura, diazepam tab, ethyl alcohol, bee's sting, zinc phosphide etc. There was no case of scorpion sting, may be because of the small sample size. In our study there was an unbelievable site of snake bite on hard palate of the child, surprisingly true. Overall mortality varied from 0.64 to 11.6% in Indian studies verses 6.7% in the present study. 5 deaths were due to snakebite and 1 due to zinc phosphide.

Conclusion:

There is a need to educate parents to keep poisonous substances secured in locked cabinets and not to store poisonous liquids in empty soft drink or water bottles. There should a label on such product about initial first aid step in case accidental poisoning. Parent should know when and how to induce vomiting immediately may be by using indigenous substances available at home.

Limitation of this study:

Small number of cases. However, the study provides useful information about the current trend of childhood poisoning in rural India in general and rural Bengal in particular.

Conflict of interest: None.

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Role of each author:

Mandal Achinta - Study design, data collection, patient care, drafting; Das Pradip Kumar - Data analysis, literature search, supervision; Datta Asok - Supervision, editing.

Fig. 1: Organophosphorus poisoning improved with inj. atropine

Fig. 3: Haematotoxic snake bite in right leg

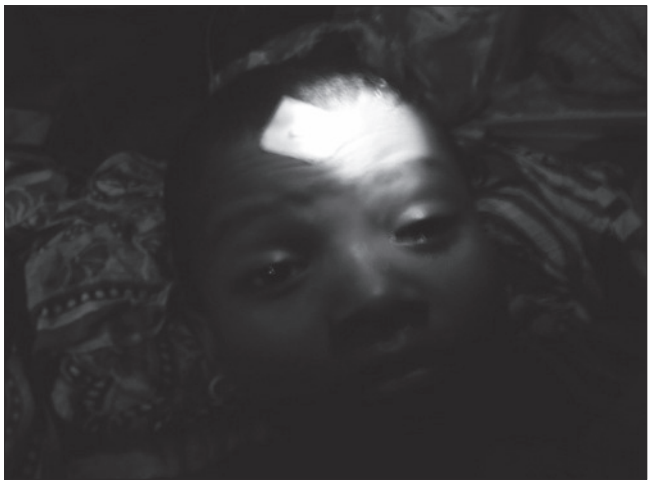

Fig. 2: Nurotoxic snake bite with ptosis improved with ASV

Fig. 4: Snake bite (Fang marks) on hard palate.

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