Original Research Paper

Profile of Acute Poisoning In Paediatric Age In District Moradabad: A Hospital Based Study

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Abstract

Rapid socioeconomic development in India during the last decade may have led to changes in the profile of child hood poisoning. To determine the profile and outcome of acute poisoning in paediatric patients presenting to the tertiary care centre in Moradabad we retrospectively analysed the children admitted to the ward of TMMC & RC and district hospital of Moradabad. The median age of the children was 5.5 and standard deviation was 5.84 in the age range of 9 month to 17.5 years. Male: Female ratio was 1.3:1. 77.19% patients reached the hospital within six hour. Insecticides & Pesticides (55.04%), household cleaners (21.48%) and drugs (11.41%) were the most frequent implicated agents. Vomiting (63.75%) was the most common presenting symptom followed by altered sensorium (38.92). Almost two third (63.76%) were accidental in nature whereas (32.89%) was suicidal. Median duration of stay was 2 day with stay of 1-3 day commonest in 55.03% of cases. One twenty six (84.56 %) patients were discharged after the treatment. 10.73 % leaved against the medical advice and seven (4.71%) died during the treatment.

Key Words: Children, Poisoning, Insecticide, Suicidal, Accidental

Introduction:

Poisoning in children is an important health problem and is one of the common medical emergencies encountered in paediatric practice and is a worldwide problem. [1] It has significant cost in the form of financial as well as emotional and is largely an accidental in nature.

It has been identified as one of the major cause of childhood and adolescent hospital emergency presentations and admissions in most of the developed countries including the U.S, U.K & Australia. [2]

The studies done in the developed countries like U.S.A, U.K, Australia and European has variations according to the demography, cultural practices, education and socioeconomic status while the developing countries like India has few studies for the incidence and outcome of paediatric patient. Poisoning in children can be acute or chronic.

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In acute poisoning symptoms suddenly appears soon after the ingestion, inhalation or after coming in contact with poisonous substance. In chronic poisoning symptoms develop gradually by exposure of poisonous substance and there is complete disappearance of symptoms on the removal of patients from surrounding. Acute childhood poisoning is an important cause of morbidity and mortality in children and can be significantly and effectively controlled by preventive measures.

Accidental poisoning is 12th leading cause of admission in the paediatric ward in India and accounts for 1% hospitalization. [3]

While the rate of childhood morbidity and mortality due to the infections is decreasing because of the universal immunization programme launched by the Government of India and also by the immunization done by the paediatricians in private practice, the rate of acute poisoning is almost the same because least attention is given by the family members.

The pattern of poisoning is related to the developmental stage of child and the accessibility of the poisonous substance.

Accidental poisoning is common in the preschool or toddler age group because the children up to this age have exploratory tendency for the substance by taking it into the mouth while the suicidal poisoning is due to arguments by parents or stress [4] in adolescent age group because they have access to the common household known poisonous substance

kept in the house carelessly by the family members. It is preventable by putting the substance into the child proof bottles and packings [5] the measures yet to be taken by the developing countries like India.

Aims and Objectives:

- To determine the Clinico-epidemiological profile and outcome of acute childhood poisoning in Moradabad
- To find out different house hold agents involved in acute poisoning.

Material and Method:

The present retrospective study was conducted by Department of Forensic Medicine, T.M.M.C & R.C Moradabad. All children up to the age of 18 years admitted to the paediatric ward and emergency of T.M.M.C & R.C hospital and District hospital with history of acute poisoning due to ingestion of household poisonous substance from June 2012 to May 2014 were included in the study and there details were obtained from the medical records kept in the medical record section.

The cases of insect bite, animal bite, contact poisons, food poisoning, chronic poisoning and those having no signs and symptoms of poisoning were excluded from the study. Data regarding the age, sex, time of poison ingestion, aetiological agents, time of arrival at hospital, manner of poisoning and hospital outcome were entered in the predesigned Performa.

No toxicological analysis report was available for any patient and diagnosis was made on the basis of history, detailed clinical examination, investigations and general and specific management procedures were carried out accordingly and outcome was measured in terms of complete recovery and expiry.

The data was collected, analysed and presented in form of Table & Figures.

Observations and Result:

Total 9370 children of paediatric age group from one month to 18 year excluding the neonates were admitted in the paediatric ward of T.M.M.C & R.C hospital and district hospital of Moradabad. Out of these 149 were admitted for the acute intoxication with household poisonous substance. The incidence of poisoning is 1.6%.

Median age of children was 5.5 and standard deviation was 5.84 in the age range of 9 month to 17.5 years.

In this study age varies from less than one year to 18 years and peak incidence was observed in age group 1-6 year comprising 79 (53.02%) cases followed by 12-18 yrs which has 56 (37.59%) cases. (Table 1) Out of total 149 cases 85(57.07%) were male while 64(42.93%) were female. Thus male: female ratio of 1.3:1 was observed. (Table 1)

Present study showed that 66(44.30%) patients reached the hospital in 1-6 hrs followed by 49(32.89%) patients who arrived within 1 hr. Thus majority of the patients 115(77.19%) reached within 6 hrs for the treatment. (Table 2)

Majority of poisoning cases 82(55.04%) was due to insecticides and pesticides followed by house hold cleaners and detergents 32 (21.48%) cases. Drugs and kerosene were involved in 17(11.41%) and 8(5.36%) cases respectively.

Among insecticides organophosphates was most common agent responsible in 48(32.21%) cases followed by zinc phosphide 12(8.06%) cases. (Table 3)

In this present study vomiting was the most common presentation seen in 95(63.75%) cases followed by altered sensorium 58(38.92%) and then drooling of saliva from the mouth in 43(28.85%) cases.

Rest of the symptoms present in cases were convulsions 32(21.47%), odour of poisoning 29(19.46%), pain in abdomen 22(14.76%), diarrhoea 15(10.06%), blurred vision 10(6.71%) and cyanosis 9(6.04%). (Table 4) In our study accidental poisoning was commonest manner of poisoning seen in 95(63.76%) cases followed by suicidal 49(32.89%) and least was homicidal seen in 5(3.35%) cases. (Table 5)

Duration for which maximum patients were hospitalized was 1-3 days seen in 82(55.03%) cases followed by the 31(20.80%) patients who were discharged on same day. Mean duration of hospital stay was 2.92. Median duration was 2 day. (Table 6) Overall survival was seen in 126(84.56%) cases and the patients were discharged. Among the remaining 16(10.73%) cases leaved against medical advice and 7(4.71%) cases died in the hospital during the treatment. (Fig. 1)

Discussion:

Acute poisoning in children is significant cause of morbidity and mortality in paediatric age group in India and the incidence of poisoning in the present study was 1.3% which is similar to the study done by others. [6, 8, 12]

However the study done by Budhathoki S et al [13] showed the incidence of poisoning was 3.4% in paediatric admission and there is a variation from 0.33% to 7.6% of admissions in hospitals across India. [4] It suggested that the magnitude of the problem in Moradabad is more than the actual incidence due to under reporting

of cases. The reason behind this may be the treatment of accidental cases of poisoning in the private clinics and the hospitals.

Majority of the children 79 (53.02%) are in the age group of 1- 6 years of age and this is common finding in the other studies also [4, 6-10] but it is in contrast to the study done by Sharma J et al [12] where the most common age group is 11-18 years and Singh M et al [15] reported maximum incidence were above 5 years of age. This is due to the reason that children in this age group especially the toddler group or the preschool children are curious and they explore their world with all the senses including taste.

They keep each and every thing in mouth because of rapid neurological development and are unaware of consequences. Males outnumbered the females in the present study with the male: female ratio of 1.3:1and is comparable with most of other studies. [4, 6-13]

Poisoning is more common in boys as compared to girls because males are more active, curious and adventurous by nature.

Most of the patients 115(77.19%) arrived within the six hours after ingestion of the poisonous substance. Singh S et al reported the average time of 6.77 hrs. [9] It was due to the availability of transportation facility and due to the better connectivity of rural and urban area by the roads. About 34(22.81%) cases get delayed and reached the hospital within 24 hrs and it may be due to ignorance by the parents or may be due to the late appearance of symptoms.

In the present study the maximum numbers of cases of poisoning are due to the pesticides & insecticides 82(55.04%) followed by house hold cleaners & detergents 32 (21.48%) and drugs 17(11.41%). The most common insecticide responsible was organophosphates and is consistent with other studies. [6, 12, 13]

Others were zinc phosphide, Organochlorine and Pyrethrins. Children are exposed to these compounds as these are available in different forms of agricultural and household insecticides and are kept carelessly in homes within the reach of children.

Studies done in earlier two decades by Indian authors [7, 8, 10] and other adjoining regions showed that kerosene was the most common poisoning agent accounting for 25-50% of cases. Kerosene poisoning 8(5.36%) is fourth most common cause in our study and the trend is decreasing as shown in the study done by Bhat N.K et al, Sharma J et al and Budhathoki S et al. [6, 12, 13] Kerosene is no longer used as a cooking fuel by the rural population and is also not available easily because of the distribution of the LPG by the government and also due to the availability of LPG in the black market.

Toxicity by the drugs is also common in our country [4] as well as in the developed countries because the drugs which are used by the family members for the non-communicable diseases like diabetes, hypertension, insomnia, depression, epilepsy and general medicines for pain they are in easy reach of the child and also they are not kept in child proof packs and containers. Buch et al [14] reported the medicine to be the commonest substance for poisoning.

Vomiting was the most common clinical presentation observed in more than half 95(63.75%) cases. Similar finding was reported by other researchers. [6, 12, 13] Next common in decreasing order are altered sensorium 58(38.92%), drooling of saliva from the mouth 43(28.85%), convulsions 32(21.47%), odour of poisoning 29(19.46%), pain in abdomen 22(14.76%). This is because commonest poison was insecticide and pesticide.

In the present study majority of the 95(63.76%) cases were due to the accidental poisoning followed by suicidal 49(32.89%) cases and least was the homicidal poisoning seen in only 5(3.35%) cases. Accidental poisoning is commonest by insecticides in children of lower age groups because they explore the substance by taking it into mouth kept in the home within their reach.

Suicidal poisoning is common in adolescent age group [10, 11, 13] by house hold cleaners and drugs and are deliberately consumed to show the attempt of suicide due to the scolding by their parents, stress of performing better in studies and other personal matters. Homicidal poisoning may be due to drug overdose or may be a form of child abuse.

Average duration of stay in this study was 2.92 days. Duration of stay is similar to that observed by Tak et al and Gupta et al. [17, 18]

Overall survival in our study was seen in 126(84.56%) cases and the patients were discharged and 16(10.73%) cases leaved against medical advice Mortality was in 7(4.71%) cases. [12, 16] However Singh S et al [9], Budhathoki S et al [13] had reported the mortality rate of 12.5% and 12% respectively.

Reason for the low mortality is due to the timely admission in the hospital and proper care and treatment given in the hospital.

Conclusion:

Acute poisoning in the children is an important cause of morbidity and mortality along with other diseases of paediatric patients. The profile of poisoning in our study is almost similar

to the other hospital based studies done in other parts of the country. Due to rapid socioeconomic development of Moradabad, a district of western Uttar Pradesh in the last couple of decades and with the wider availability of LPG and lower availability of kerosene, the kerosene poisoning is decreased to the fourth common cause of childhood poisoning.

Incidence of suicidal poisoning is increasing in the teenagers either due to stress or due to the arguments by the parents and can be prevented by proper counselling.

Accidental poisoning can be reduced by simple measures like parental education, replacing the poisoning agent with one of lower toxicity, legislation regarding the child resistant packaging of necessary poisons.

Poison control centres should be established by tertiary care centres and numbers to be displayed for the first aid and referring more severe poisoning cases for treatment in hospital.

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Table 1: Age & Sex wise Distribution

Age grps (Yrs)	Male (%)	Female (%)	Total (%)
< 1	1 (0.67)	0 (0.00)	1(0.67)
1- 6	55 (36.92)	24 (16.10)	79 (53.02)
6-12	7 (4.70)	6 (4.02)	13 (8.72)
12-18	22 (14.78)	34 (22.81)	56 (37.59)
Total	**85** (57.07)	**64** (42.93)	**149** (100)

Table 2: Time between Ingestion and Arrival at Hospital

Time (hrs)	Cases (%)
< 1	49 (32.89)
1 – 6	66 (44.30)
6 – 24	34 (22.81)
Total	**149 (100)**

Table 3: Aetiological Agents Causing Poisoning in Children

Poisons	Type of Poison	N	%
Insecticides & Pesticides		**82**	**55.04**
	Organophosphates	48	32.21
	Zinc Phosphide	12	8.06
	Pyrethrins	9	6.05
	Organochlorine	8	5.36
	Carbamates	5	3.36
Cleaners & Detergents		**32**	**21.48**
	Phenyl	18	12.08
	Bleaching Powder	6	4.03
	Acids	5	3.36
	Surf	3	2.01
Drugs		**17**	**11.41**
	Antidepressants	8	5.36
	Oral hypoglycaemic	4	2.69
	Anticonvulsants	2	1.35
	Antihistamines	1	0.67
	Antihypertensive	1	0.67
	Pain relievers	1	0.67
Kerosene		**8**	**5.36**
Plants		**4**	**2.69**
Naphthalene		**3**	**2.01**
Alcohols		**2**	**1.34**
Unknown		**1**	**0.67**
Total		**149**	**100%**

Table 4: Common Modes of Presentation with Poisoning

Symptoms	Cases	%
Vomiting	95	63.75
Altered sensorium/Unconsciousness	58	38.92
Drooling of Saliva	43	28.85
Convulsions	32	21.47
Odour of Poison	29	19.46
Pain in Abdomen	22	14.76
Diarrhoea	15	10.06
Blurred vision	10	6.71
Cyanosis	9	6.04
Headache	7	4.70
Fever	5	3.35
Hematemesis	5	3.35
Restlessness/Agitation	4	2.68
Respiratory Distress	2	1.34
Oliguria/Anuria	2	1.34
Red hot skin	1	0.67
Haematuria	1	0.67

Table 6: Duration of Stay in Hospital

Duration	Cases (%)
< 1 day	31 (20.80)
1 – 3 day	82 (55.03)
3 – 6 day	25 (16.77)
6 – 9 day	11 (7.40)

Fig. 1: Outcome after the Treatment of Poisoning Cases

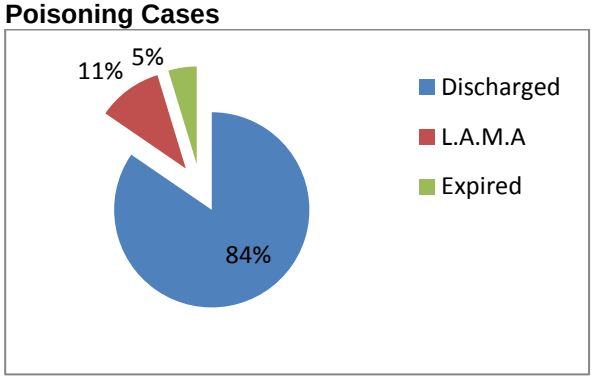

Table 5
Manner of Poisoning by Various Agents

Poison	Accidental	Suicidal	Homicidal	Total (%)
Insecticides & Pesticides	66	13	3	82 (55.03%)
Cleaners & Detergents	11	20	1	32 (21.47%)
Drugs	7	10	0	17(11.40%)
Kerosene	6	2	0	8 (5.36%)
Plants	2	2	0	4 (2.68%)
Naphthalene	2	1	0	3 (2.01%)
Alcohols	1	1	0	2(1.34%)
Unknown	0	0	1	1(0.67%)
Total	**95 (63.76%)**	**49 (32.89%)**	**5 (3.35%)**	**149 (100%)**