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A Prospective Study of Profile of Hospitalized Children with Acute Poisoning In a Tertiary Care Hospital

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Abstract
Introduction: *Accidental poisoning represents one of the most common medical emergencies encountered by young children and adolescents. The paediatric emergency toxicology is unique because of its natural division into two distinct components. Young children aged 1 to 5 years who innocently ingested small amounts of a single substance constitute the first group.*
Materials and Methods: *A retrospective study of cases was carried out at Department of Pediatrics, District Hospital, Machilipatnam between January 2018 and December 2018 for 1 year. The study materials included all the patients with acute poisoning admitted in this institute. Patients less than 1 month, poisonous bites and stings, idiosyncratic drug reactions and food poisoning were excluded from the study. The variables which were analysed were: age, gender, time interval between ingestion and arrival to hospital, month of admission, nature of poisoning, product, symptoms and signs, diagnostic and therapeutic interventions including requirement of ventilator support, duration of hospital stay and outcomes. Age was noted in complete year and further divide into three groups <1 year, 1-5 year, 5-10 year and >10 yr. If product is unknown then it was labelled as unknown product. The type of poisoning was categorized as intentional or non-intentional. Treatment measures like decontamination, gastric lavage, administration of activated charcoal, antidotes, any other medicine and the need of ventilator was mentioned. The outcomes were categorized according to the information obtained from case records as follows: (a) cure - patient without symptoms or patient discharged from hospital; (b) Left Against Medical Advice (LAMA) and (c) death.*
Results: *This constituted 3.4% of the total admissions and 4.4% of total deaths among total admission. Male female ratio was 1.9 (36 Vs 28). Among all cases, 51 (79.7%) were admitted in Ward and 13 (20.3%) in PICU among which 4 (6.25%) patients were placed on mechanical ventilation. The mean (±SD) duration of hospitalization was 4.18 ±1.9 days. The most common month for poisoning was between May - July 21 i.e. (32.8%). The mean (± SD) age was 7.05 ± 4.9 years (range 90/365-14 years). The age and gender distribution of patients with poisoning are presented in Table 1. The distribution of poison cases according to types of poison, death and age group is as shown in Table 2. The common symptoms of poisoning are presented in Table 3.*
Conclusion: *This retrospective study concluded that substantial proportion of poisoning cases reported during the study period was unintentional and under five children. Therefore, strengthening poison awareness programs about safety issues to public particularly parents are needed for its prevention.*
Key Words: *Accidental poisoning, LAMA, Death*

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I. Introduction

Accidental poisoning represents one of the most common medical emergencies encountered by young children and adolescents. The paediatric emergency toxicology is unique because of its natural division into two distinct components. Young children aged 1 to 5 years who innocently ingested small amounts of a single substance constitute the first group.[1]Those at higher risk include male gender, hyperactivity and increased finger mouth activity or pica.[3] Environmental factors like new baby in house, marital disharmony among parents, illness and economic crisis add further risk. Paediatricians can play an important role to prevent poisoning in these children by providing anticipatory guidance. The second group of children which is more prone to poisoning, includes adolescents who purposefully ingests .[2]

Larger amounts of one or more substances because of emotional or psychiatric distress. Children between these groups are less commonly poisoned. The exact incidence and prevalence of acute poisoning is not known in India but it is quite common and unreported problem in children. Hence, we studied the profile of hospitalised children with acute poisoning in terms of clinical and epidemiological data.[4,5]

II. Materials And Methods

A retrospective study of cases was carried out at Department of Pediatrics, District Hospital, Machilipatnam between January 2018 and December 2018 for 1 year. The study materials included all the patients with acute poisoning admitted in this institute. Patients less than 1 month, poisonous bites and stings, idiosyncratic drug reactions and food poisoning were excluded from the study. The variables which were analysed were: age, gender, time interval between ingestion and arrival to hospital, month of admission, nature of poisoning, product, symptoms and signs, diagnostic and therapeutic interventions including requirement of ventilator support, duration of hospital stay and outcomes. Age was noted in complete year and further divide into three groups <1 year, 1-5 year, 5-10 year and >10 yr. If product is unknown then it was labelled as unknown product. The type of poisoning was categorized as intentional or non-intentional. Treatment measures like decontamination, gastric lavage, administration of activated charcoal, antidotes, any other medicine and the need of ventilator was mentioned. The outcomes were categorized according to the information obtained from case records as follows: (a) cure - patient without symptoms or patient discharged from hospital; (b) Left Against Medical Advice (LAMA) and (c) death.

All data were collected in predesigned data sheet and analysis was performed using Statistical Program for Social Sciences (SPSS) 11.5 version

III. Results

During the study period 64 children were admitted with a clinical diagnosis of acute poisoning. This constituted 3.4% of the total admissions and 4.4% of total deaths among total admission. Male female ratio was 1.9 (36 Vs 28). Among all cases, 51 (79.7%) were admitted in Ward and 13 (20.3%) in PICU among which 4 (6.25%) patients were placed on mechanical ventilation. The mean (±SD) duration of hospitalization was 4.18 ±1.9 days. The most common month for poisoning was between May - July 21 i.e. (32.8%). The mean (± SD) age was 7.05 ± 4.9 years (range 90/365-14 years). The age and gender distribution of patients with poisoning are presented in Table 1. The distribution of poison cases according to types of poison, death and age group is as shown in Table 2. The common symptoms of poisoning are presented in Table 3.

The distribution of poison cases according to age group and nature is shown in Table 4. One poisoning was homicidal aged 3 months of organophosphorus poisoning by a relative due to family dispute. The mean time of admission to the pediatric emergency for our patients was 6.87±8.33 hours (Range from 1- 48 hr). Of all the patients, 28 (43.8%) received pre-referral treatment, 44 (68.8%) received antidotes and 22 (34.4%) gastric lavage. Specific antidotes were mainly for organophosphorus poisoning. Of the 3(4.6%) expired patients, 2 were due to mushroom and 1 was due to organophosphorus.

S.No	Age Group	Male (%)	Female (%)	Total (%)
1	**<1 year**	**5 (7.8)**	**3 (4.7)**	**8 (12.5)**
2	**1-5 years**	**12 (18.8)**	**13 (20.3)**	**25 (39.1)**
3	**5-10 years**	**6 (9.4)**	**2 (3.1)**	**8 (12.5)**
4	**>10 years**	**13 (20.3)**	**10 (15.6)**	**23 (35.9)**
5	**Total**	**36 (56.2)**	**28 (43.8)**	**64 (100)**

Table 1: Distribution of cases according to age group and gender

S.No	Type of poison	Admission N (%)	Death N (%)	Age Group			
				<1 year	1-5 year	5-10 years	>10 years
1	**Organophosphorus**	24 (37.5)	1(33.3)	2	4	5	13
2	**Mushroom**	16 (25)	2 (66.6)	1	7	3	5
3	**Kerosene**	11 (17.2)	0 (0)	5	5	0	1
4	**Zinc phosphate**	3 (4.7)	0 (0)	0	3	0	0
5	**Olanzapine**	2 (3.1)	0 (0)	0	2	0	0
6	**Acid**	1 (1.6)	0 (0)	0	0	0	1
7	**Cannabis**	1 (1.6)	0 (0)	0	0	0	1
8	**Vitamin A**	1 (1.6)	0 (0)	0	1	0	0
9	**Warfarin overdose**	1 (1.6)	0 (0)	0	0	0	1

10	**Unknown**	4 (6.2)	0 (0)	0	3	0	1
11	**Total**	**64 (1000**	**3 (4.6)**	**8 (12.5)**	**25 (39.1)**	**8 (12.5)**	**23 (35.9)**

Table 2: Distribution of poison cases according to the type of poison, death and age group

S.No	Symptoms	Number of cases (%)
1	**Vomiting**	28 (43.7)
2	**Drowsiness**	13 (20.3)
3	**Abdominal pain**	12 (18.7)
4	**Frothing**	11 (17)
5	**Unconsciousness**	10 (15.6)
6	**Fever**	10 (15.6)
7	**Loose stool**	8 (12.5)
8	**Difficulty in breathing**	6 (9.3)
9	**Seizure**	5 (7.8)
10	**Sweating**	3 (4.6)
11	**Lacremation**	3 (4.6)
12	**Rash**	2 (3.1)
13	**Fasciculation**	2 (3.1)
14	**Bleeding manifestation**	1 (1.5)

Table 3: Common clinical features of poison cases

S.No	Age Group	Non-intentional n (%)	Intentional n (%)	Homicidal n (%)	Total
1	<1 year	7 (87.5)	0 (0)	1 (12.5)	8
2	1-5 year	25 (100)	0 (0)	0 (0)	25
3	5-10 year	7 (87.5)	1 (12.5)	0 (0)	8
4	>10 years	10 (43.5)	13 (56.5)	0 (0)	23
5	Total (%)	49 (76.6)	14 (21.9)	1 (1.6)	65

Table 4: Distribution of poison cases according to age group and nature

IV. Discussion

In our study majority of unintentional poisoning were of less than 5 year old children which are consistent with other studies. Children under five years-old were the major risk group for unintentional poisoning due to their curiosity in exploring their surroundings, unable to differentiate between harmful and harmless substances and the regular hand to mouth contact that is common during this age group. Inadequate storage and easily accessible of poison are leading causes of unintentional poisoning in this age group.[6,7]

In the present study 13 out of 14 were cases of intentional poising were of more than 10 years of age group. A similar pattern was observed in other studies. Intentional ingestion of poison can be suicidal or just an adolescent cry for help. The possible risk factors are stress of school work, poor school performance, bullying at school, failure in relationship, conflicts with parents and associated psychological conditions. In our study, 6 suicide attempts occurred following conflict with family member and 2 due to poor performance in examination whereas in 6 cases the cause could not be determined.[8]

In this study males are predominately more in all age group than females. Several other studies also show a male preponderance in childhood poisoning which support the finding of the present study. This can be due to boys being more aggressive, active and curious than girls. However, there are a few studies which show female predominance. A study from Turkey revealed that children above 10 years showed more poisoning in girls.[9,10]

Most common poisonings in the present study was due to organophosphorus compounds used as pesticides in farming which is similar to other studies carried out in Machilipatnam. The Eastern part of Machilipatnam is a predominantly agricultural area with easy availability of insecticides in most rural households. These are mostly stored in empty colored bottles predisposing young children to accidently consume them. However, many studies from India implicate kerosene as the most frequently encountered poisons in pediatric cases which is the third most common poisoning in our study.[11]

Kerosene is used as a cooking fuel in our country by low income families and is stored in soft drink colored bottles usually within easy reach of children. Mushroom is the second most common poisoning in our study causing 2 deaths which consist of 12.5% of death among all admission due to mushroom. The previous study from this institute and Patan showed 30% and 33% mortality respectively.[12,13]

However, mortality is high as compared to other poisoning. Higher mortality in mushroom poisoning was most likely due to severe liver toxicity and late manifestation of symptoms leading to late arrival to emergency.

V. Conclusion

This retrospective study concluded that substantial proportion of poisoning cases reported during the study period was unintentional and under five children. Therefore, strengthening poison awareness programs about safety issues to public particularly parents are needed for its prevention.

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