

A Clinical Study of Acute Poisoning Cases with Special Reference to Pattern and Outcome in a Tertiary Care Hospital.

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Abstract: Background: Poisoning is a global public health problem largely underexplored in North east India. This study describes the mode (suicidal, accidental, homicidal) and type of poisoning; relation to age, sex, occupation; outcome of different type of poisons and requirement of ventilatory support in different type of poisonings.

MATERIALS AND METHODS This observational study was conducted in Department of Medicine of GUWAHATI NEUROLOGICAL RESEARCH INSTITUTE, NORTH GUWAHATI over a period of one year. A total of 234 patients were enrolled in the study after obtaining informed consent.

RESULTS Poisoning was more common among males (62.39%). Maximum number of patients were in the age group 18-30 years (58.55%) and consumption was found to be more prevalent in rural population (79.49%). Most of the patients were farmers and students. Most common types of poisoning were organophosphate (n=92, 39.32%), snake bite (n=41, 17.52%) followed by alcohol (n=31, 13.24%). Out of 234 patients, 220 (94.02%) improved while 14(5.98%) expired. Mortality was highest in organophosphate poisoning. Requirement of ventilatory support was most commonly associated with alcohol intoxication (32.26%) followed by organophosphate poisoning (20.65%).

CONCLUSION Poisoning was more common in young males. Pesticides and snake bite were major causes of poisoning. Complications though rare were potentially preventable by community education and awareness on timely attention to seek medical care, and avoidance of harmful first aid practices. Training of peripheral health center personnel to manage cases of poisoning, to provide ventilatory support and escalation in public awareness about the importance of problem should be done.

Keywords: Organophosphate, Poisoning, Snake Bite, Ventilatory Support.

Date of Submission: 29-08-2019

Date of acceptance: 14-09-2019

I. Background

Poisoning is a important global health problem associated with significant mortality and morbidity. Over 345,000 people of all ages died worldwide as a result of accidental poisoning in 2004 according to the WHO Global Burden of Disease project and approximately 45,000 had been children and young people less than 20 years [1]. Four-fold higher mortality rate is observed in low and middle income countries as compared to high income countries [1]. Patterns of poisoning vary in different geographic areas globally with different socio-cultural and environmental risk factors. Despite having a significant impact on child health, global data on poisoning related morbidity are largely unavailable and regional data are not comparable due to variable access to healthcare services [1]. In India five to six persons per lakh of population die due to acute poisoning every year ranking it as the fourth most common cause of mortality in rural India.[2]

This study has been aimed to determine the mode (Suicidal, accidental, homicidal) and type of poisoning , clinical management, complications, and outcome of acute poisoning.

II. Methods And Materials

This observational study was conducted in Department of Medicine of GUWAHATI NEUROLOGICAL RESEARCH INSTITUTE, NORTH GUWAHATI over a period of one year (APRIL 2018-APRIL 2019). A total of 234 patients from 18 to 80 years admitted with diagnosis of poisoning/snake bite in medical wards of hospital were enrolled in the study after obtaining informed consent. In all patients, a detailed history was taken, clinical examination was done. We reviewed the medical records and collected data of all cases. These records were consistently assessed regarding age, gender, marital status, occupation, agents involved in the exposure, exposure time, type, route, reason, presenting symptoms, and signs especially these consistent with toxidromes, management, clinical course, laboratory investigations, and final outcome.

III. Results

Age and sex distribution of study population is given in Table 1. Out of 234 patients , 146(62.39%) were males and 88 (37.61%) were females. Maximum number of patients were in the age group 18-30 years (58.55%).

Table 1.

AGE	MALE(n=146)		FEMALE(=88)	
	NO.	%	NO.	%
18-30	79	54.11	58	65.91
31-39	31	21.23	14	15.91
40-49	18	12.33	10	11.36
50-59	12	8.22	5	5.68
60 AND ABOVE	6	4.11	1	1.14
TOTAL	146	100	88	100

Approximately, one fifth of the patients (n=49; 20.94%) were illiterate. Educational status of 98 (41.88%) patients was up to high school, 39 (16.67%) intermediate and rest 48 (20.51%) were graduates/postgraduates. In the present study, poisoning was found to be more prevalent in rural population (n=186; 79.49%) as compared to urban population (n=48; 20.51%).

TABLE 2.

EDUCATIONAL QUALIFICATION	NO.	%
ILLITERATE	49	20.94
HIGH SCHOOL	98	41.88
INTERMEDIATE	39	16.67
GRADUATE/POST GRADUATE	48	20.51

Out of 234 patients, most patients were from agrarian background (38.89%) followed by students (26.92%) and housewives (13.25%). Other professions included business (7.69%), labourers (6.41%), driver (2.14%) and other unclassified professions (4.70%).

TABLE 3.

PROFESSION	MALES(n=146)		FEMALES(n=88)		TOTAL	
	NO.	%	NO.	%	NO.	%
AGRICULTURE	89	60.96	2	2.72	91	38.89
STUDENT	24	16.44	39	44.32	63	26.92
HOUSEWIFE	0	0	31	35.23	31	13.25
BUSINESS	17	11.64	1	1.14	18	7.69
LABOURER	14	9.59	1	1.14	15	6.41
DRIVER	5	3.42	0	0	5	2.14
UNCLASSIFIED	7	4.79	4	4.55	11	4.70

Motive of consumption of poison in majority of patients was suicidal (75.21%) and in rest of the patients, poisoning occurred accidentally (21.37%) including snake bite. Non-marital family problems (29.06%) and marital discord (21.37%) were the most common reasons for consumption of poison (Table 4).

TABLE 4.

REASON	MALES(n=146)		FEMALES(n=88)		TOTAL(n=234)	
	NO.	%	NO.	%	NO.	%
MARITAL DISPUTE	29	19.86	21	23.86	50	21.37
LOVE AFFAIR	8	5.48	3	3.41	11	4.70
FAMILY PROBLEMS(OTHER THAN SPOUSE)	41	28.08	27	30.68	68	29.06
FINANCIAL PROBLEM	21	14.38	9	10.23	30	12.82
DEPRESSION	10	6.85	7	7.95	17	7.26
ACCIDENTAL	36	24.65	14	15.91	50	21.37
UNKNOWN	1	0.68	7	7.95	8	3.42

Organophosphate poisoning (n=92, 39.32%) was the most common type of poisoning followed by snake bite (n=41, 17.52%) and alcohol intoxication (n=31, 13.24%) as shown in Table 5. Among males, most common type of poisoning was organophosphate poisoning (n=52, 35.62%) followed by snake bite (n=32, 21.92%) while among females most common type of poisoning was organophosphate (n=40, 45.45%) followed by corrosive/phenyl poisoning (n=12, 13.64%).

TABLE 5.

TYPE OF POISON	MALE(n=146)		FEMALE(n=88)		TOTAL(n=234)	
	NO	%	NO	%	NO	%
ORGANOPHOSPHATE	52	35.62	40	45.45	92	39.32
SNAKE BITE	32	21.92	9	10.23	41	17.52
RAT KILLER	4	2.74	5	5.68	9	3.84
CORROSIVE/PHENYL/ACID	5	3.42	12	13.64	17	7.26
DRUG OVERDOSE	6	4.11	7	7.95	13	5.56
INSECTICIDE(OTHER THAN ORGANOPHOSPHATE)	3	2.05	4	4.54	7	2.99
ALCOHOL	29	19.86	2	2.27	31	13.24
PETROL/DIESEL/KEROSENE	12	8.22	0	0	12	5.13
HAIR DYE/OIL	1	0.68	0	0	1	0.43
SCORPION BITE	2	1.37	3	3.41	5	2.14
UNKNOWN	0	0	6	6.82	6	2.56

In our study, 50% (majority) of patients came within 2 hours after consumption of poison while 35.04% patients reported between 2 to 4 hours (Table 6). Among patients who reach hospital between 2 to 4 hours, 95.12% improved and 4.88% expired.

TABLE 6.

TIME OF PRESENTATION	OUTCOME					
	IMPROVED(n=223)		EXPIRED(n=14)		TOTAL(n=234)	
	NO	%	NO	%	NO	%
< 2 HOURS	112	95.73	5	4.27	117	50
2-4 HOURS	78	95.12	4	4.88	82	35.04
4-8 HOURS	17	89.47	2	10.53	19	8.12
>8 HOURS	16	84.21	3	15.79	19	8.12

Out of 234 patients enrolled in the study, 220 (94.02%) improved while 14(5.98%) expired. Mortality was higher with use of alcohol intoxication (42.86%), organophosphate poisoning (21.31%) and snake bite(14.28%). Requirement of ventilator was most commonly associated with alcohol intoxication (32.26%) followed by organophosphate poisoning (20.65%).

TABLE 7.

POISON TYPES	MALE				FEMALE				REQUIREMENT OF VENTILATOR		TOTAL	EXPIRED	
	IMPROVED		EXPIRED		IMPROVED		EXPIRED		NO	%		NO	%
	NO	%	NO	%	NO	%	NO	%					
ORGANOPHOSPHATE	49	36.57	3	25	38	44.18	2	100	19	20.65	92	5	35.71
SNAKE BITE	30	22.39	2	16.67	12	13.95	0	0	6	13.64	44	2	14.28
RAT KILLER	4	2.98	0	0	5	5.81	0	0	0	0	9	0	0
CORROSIVE/PHENYL/ACID	5	3.73	0	0	9	10.46	0	0	0	0	14	0	0
DRUG OVERDOSE	6	4.48	0	0	7	8.14	0	0	1	7.69	13	0	0
INSECTICIDE(OTHER THAN ORGANOPHOSPHATE)	3	2.24	0	0	4	4.65	0	0	0	0	7	0	0
ALCOHOL	23	17.16	6	50	2	2.32	0	0	10	32.26	31	6	42.86
PETROL/DIESEL/KEROSENE	11	8.21	1	8.33	0	0	0	0	1	8.33	12	1	7.14
HAIR DYE/OIL	1	0.75	0	0	0	0	0	0	0	0	1	0	0
SCORPION BITE	2	1.49	0	0	3	3.49	0	0	0	0	5	0	0
UNKNOWN	0	0	0	0	6	6.98	0	0	0	0	6	0	0
TOTAL	134	91.78	12	8.22	86	97.73	2	2.27	37	15.81	234	14	5.98

IV. Discussion

Acute poisoning represents one of the most common medical emergencies in developing countries. Determination of epidemiological characters of childhood poisoning is of paramount importance for preventive measures and treatment plan. In the present study, men (62.39%) outnumbered women (37.61%). High degree

of stress in academic, love affairs, financial and emotional fronts, inability to achieve targets and also due to easy accessibility to poisons are the common reasons for high proportion of poisoning among men in these productive years. Many other studies have also shown that men outnumbered women.[3,4,5] However, in some studies incidence of poisoning was more in women than men.[6,7]

Majority of cases (58.55%) were from age group 18-30 years (both in male and female). This can be explained by the fact that the persons of this age suffer from stress of the modern lifestyles, unemployment, marital problems, failure in love, failure in education, family problems, impulsive behavior, etc. Past studies have also shown similar findings.[8,9] This might indicate the importance of specifically targeting this age group with early identification of stress factors and counseling.

In our study, we also found that approximately one fifth of the patients (n=49; 20.94%) were illiterate and nearly 38.89% were from agrarian background. This is due to fact that majority of patient in our study are from rural area where most of the persons are either illiterate or studied up to high school. Illiteracy also counts for the accidental cases of poisoning. This finding also shows that education is important in preventing poisoning.

This maybe because widespread use of pesticide in agriculture sector in rural area. Poverty, failure of crops, family problems and easy availability of the poison in their household made people of rural area more prone for poisoning. Other studies also show that poisoning are more common in rural areas.[10,11] However, some studies from state of Karnataka, the incidence was more in those who were from urban background.[12]

Motive of consumption of poison in majority of patients in our study was suicidal (n=176, 75.21%) and in rest of the patients, poison was consumed accidentally (n=50, 21.37%) and reason was unknown in 3.42% cases. Among accidental majority (n=41, 82%) of cases were due to snake bite. Other studies also show the same trend.[13,14]

In overall population, family problems (29.06%) and marital discord (21.37%) were the most common reason of consumption of poison. In contrast to our study, Subhash Chandra Joshi et al studied that financial crisis was one of the most common reasons as the motive behind the poisoning (53.22%).[15]

Organophosphate and alcohol are common agents used for poisoning because of low cost and easy availability and since majority of patients in our study were from rural background and were farmers. Snake bite is also common in our study because of predominance of people of rural area. Corrosive/acid/phenyl, organophosphate compounds, rat killer, drugs are easily available in home, so women select these poisons instead of others. Proportion of men was higher as compared to women for snake bite, petrol/diesel poisoning and alcohol intoxication. This be explained by the fact that alcohol addiction in India is more common in men. In rural India, men mainly work in the fields making them prone for snake bites. Petroleum products are easily accessible to men more in comparison to women.

Out of 234 patients enrolled in the study, 220 (94.02%) improved while 14(5.98%) expired. Mortality was higher with use of alcohol intoxication (42.86%), organophosphate poisoning (21.31%) and snake bite(14.28%).

Among patient who reach hospital within 2 hours, 95.73% patients improved and 4.27% expired. Among patients who reach hospital between 2 to 4 hours, 95.12% improved and 4.88% expired. This shows that getting medical treatment early is necessary to reduce expiry.

Organophosphate poisoning (n=92, 39.32%) was the most common type of poisoning followed by snake bite (n=41, 17.52%) and alcohol intoxication (n=31, 13.24%) . Other studies also show that the poisons responsible for most of the mortality were organophosphate pesticides.[2,9]

Requirement of ventilator was most commonly associated with alcohol intoxication (32.26%) followed by organophosphate poisoning (20.65%). In organophosphate poisoning, requirement of ventilator was due to respiratory depression, a complication seen in most of organophosphate poisoning cases. Organophosphorus poisoning and snake bite patients improved on ventilatory support.

V. Conclusion

In the present study, men outnumbered women. Majority of cases were from age group 18-30 years. Approximately, one fifth of the patients were illiterate. Poison consumption was found to be more prevalent in rural population. Most common profession of patients was agriculture followed by students and housewife. Most common type of poisoning cases reported overall was organophosphate followed by snake bite. Proportion of mortality and requirement of ventilator was higher in case of alcohol and organophosphate poisoning.

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Partha Pratim Kalita" A Clinical Study of Acute Poisoning Cases with Special Reference to Pattern and Outcome in a Tertiary Care Hospital." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 9, 2019, pp 13-17.