Original Research Article

A STUDY ON CLINICAL PATTERN AND OUTCOME OF ACUTE POISONING AT A TERTIARY CARE HOSPITAL IN KARNATAKA

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Abstract

Background: Acute poisoning is a major health problem with significant morbidity and mortality affecting people of all age groups. Acute poisoning approximately constitutes 10% admissions in medical emergency departments in India.

Objective: Present study was aimed at finding out the clinical pattern and outcome of acute poisoning at a tertiary care hospital, Karnataka.

Materials and methods: A prospective observational study was conducted over a period of 18 months. Information like name of poisonous substances, mode of poisoning, investigation reports and outcome was collected in the pre-structured proforma and analysed using SPSS version 20.

Results: Out of 100 acute poisoning cases, 49 were males and 51 females. Most common age group involved was 21-30 years of age (38%). Organophosphate poisoning was the most common type of poisoning. Mortality was highest in paraquat poisoning (100%). Overall mortality was 15%.

Conclusion: Current study showed increase in incidence of poisoning in younger generation. Organophosphate poisoning was the most common type of poisoning. Low cost and easy accessibility of OP compounds may be one of the reasons. Rat poisoning, usage of household cleansing agents and corrosive poisons (paraquat) are also in increasing trend.

Key words: poisoning, OP compound, paraquat, outcome

INTRODUCTION

Acute poisoning is a major health problem with significant morbidity and mortality affecting people of all age groups. It is estimated that up to five lakh population die every year due to acute poisoning.[1] Acute poisoning approximately constitutes 10% admissions in medical emergency departments in India. Pesticides followed by drugs were shown to be the most common agents used in poisoning in India.[2] In India 5- 6 persons/ 1 lakh population die to acute poisoning every year.[3] Percentage of deaths due to poisoning in India was 7.7% and in Karnataka it was 8.6%. Acute poisoning due to accidental and suicidal exposure causes significant mortality and morbidity throughout the world. In India poisoning is the fourth common cause of mortality.[4]

Poisoning includes pesticides, corrosives, rat poison, household cleansing materials and drug overdose in this study.. The pattern of various poisoning varies from region to region; hence knowledge of general pattern of poisoning in a particular region will help in early diagnosis and treatment and thus decrease mortality and morbidity. Hence the present study was aimed at finding out the clinical pattern and outcome of acute poisoning at a tertiary care hospital, Mangaluru, Karnataka.

Objectives: To study the clinical pattern and outcome of acute poisoning in a tertiary care hospital.

Materials and Methods:

A prospective observational study of 100 patients over a period of 18 months was conducted at a tertiary care hospital Mangalore, Karnataka. Patients admitted with history of consumption of poison (pesticides, corrosives, rat poison, house hold cleansing materials, drug overdose) were included in the study.

Predesigned, semi-structured questionnaire was devised to collect data. Patients and their relatives were asked about history of poisoning and examined for signs at presentation to the hospital. Investigations such as haemoglobin, total leucocyte count, differential leucocyte count platelet count, blood urea and creatinine were done at presentation and were repeated during the hospital stay. Patients were followed up for the outcome (discharge/death).

Inclusion criteria: All patients above 18 years of age with alleged history of consumption of poison (pesticides, corrosives, rat poison, household cleansing materials, drug overdose) were included in the study irrespective of the intention of poisoning (suicidal/homicidal).

Exclusion criteria: Patients with snake bite/ insect bite/ unknown bite/scorpion sting.

According to the study done at Mangalore, the proportion of OP compound poisoning was found to be 49%.[4] At 95% confidence level, 10%, Relative precision and 80% power of the study Sample size estimated was 96 and total of 100 cases were included in the study.

Data was entered in Microsoft excel and analyzed using SPSS software version 20. Data is presented in percentages, mean and ANOVA test was used for comparison of means between

groups. p value of <0.05 was considered as statistically significant. Study protocol was approved by the Institutional Ethical committee.

RESULTS

In this study majority of cases belonged to age group 21 to 30 years (38%), followed by 31-40 years (20%) and least were found in 61-70 years of age (2%). In present study 49 were males and 51 females and 61% were married and 39% were unmarried. Most common type of individual poisoning in present study was organophosphorus (OP) compounds (26%) followed by rat poison (25%). Most of the patients 46% (n=46) in the current study presented between 2-4 hours of consumption of poison, 24% (n=24) in 0-2 hours, 16% (n=16) more than 6 hours and 14% (n=14) in 4- 6 hours.

Mean pulse rate in OP poisoning was 99, paraquat poisoning was 86, rat poison 84 and other poisoning it was 87. There was no much significant variations in blood pressure recordings at the time of presentation to the hospital. Patients with OP poisoning had leucocytosis on the day of admission, then showed decreasing trend after 72 hours, whereas in patients with paraquat consumption TLC showed progressive trend, in rat poison consumption there is no much variation and in other groups there was initial leucocytosis then showed decreasing trend after 72 hours.
Platelets showed decreasing trend in paraquat poisoning and there was no much significant shift in OP poisoning and other types of poisoning. INR progressively increased during the hospital stay in paraquat and other types of poisoning. Overall mortality in this study during hospital stay was 15% (n=15). Mortality rate was high in patients presenting to the hospital after 6 hours of consumption of poison (n=14). Mortality rate was high in paraquat poisoning (n=10,100%).

DISCUSSION:

In the present study we observed the clinical pattern and outcome of acute poisoning cases. In our study most common age group was between 21-30 years, which is similar to Kumar SV et al [5] Ramesha KN et al[6] and Sarkar et al[7] in Bangladesh. This can be explained by that young individuals are more vulnerable to poisoning as they are more prone to impulsivity and have more social and economic stresses.
In present study 61% poisoning were married and 39% were unmarried, similar results were seen in studies conducted at Bangladesh[7] and in rural India in 2003[8] which showed that majority of poisoned patients were married.
Most common type of individual poisoning in present study was organophosphorus compounds (26%) followed by rat poison (25%) as seen in Singh B et al,[4] Antony L et al[9] and Mittal et al [10] study in which most common agents were agrochemical pesticides (49%), Organophosphates (32.5%), organophosphorus compounds(16.3%) respectively.
There was significant increase in urea levels in paraquat poisoning during hospital stay, however no significant changes were observed in OP compounds, rat poisoning and other poisonings. Significant rise in creatinine levels were observed in paraquat poisoning similar results were seen in Goudarzi F et al[11] study, no such changes were seen in OP, rat and other poisoning.

Clinical outcome was measured in terms of survival and death. Overall mortality in this study during hospital stay was 15% (n=15), similar results seen in Singh S et al[4] (17.3%), and Kumar SV et al [5] (15.4%). Mortality rate was high in patients presenting to the hospital after 6 hours of , of poison (n=14). Mortality rate was high in paraquat poisoning (n=10,100%). Mortality in present study is because of higher number of pesticide, corrosives and rat poisoning cases.

CONCLUSION

Current study showed increase in incidence of poisoning in younger generation. Organophosphate poisoning was the most common type of poisoning, low cost and easy accessibility of op compounds may be one of the reasons. Rat poisoning, usage of household cleansing agents, corrosive poisons (paraquat) are also in increasing trend. So government should make strict regulations regarding the availability of pesticides and other poisonous substances. Introduction of separate toxicological units in hospitals and promoting poison information centres will be useful to reduce the mortality related to poisoning.

LIMITATIONS:

In most cases we were not able to assess the quantity of poison consumed by the patient.

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Table-1: Socio- demographic details of study participants

		No of cases (n)	Percentage (%)
Age (years)	<20	18	18
	21-30	38	38
	31-40	20	20
	41-50	17	17
	51-60	5	5
	61-70	2	2
Gender	Male	58	58
	Female	42	42
Marital status	Single	39	39
	Married	61	61

Table-2: Frequency of type of poisoning

Type of poison	No of cases (n)	Percentage (%)
OP compounds	26	26
Paraquat	10	10
Rat poison	25	25
Others	39	39

Table 3: Descriptive details of vitals in poisoning subjects

	Mean	SD	Minimum	Maximum
Pulse rate (per min)	89.28	13.23	60	126
Respiratory rate (per min)	21.96	4.22	16	32
Temperature (F)	98.64	0.32	98.00	99.80
Systolic Blood pressure (mmHg)	125.18	11.89	100.0	170.00
Diastolic Blood pressure (mmHg)	81.52	9.93	8.00	110.00
GCS	14.9	0.54	7.00	15.00

Table 4: Comparison of different types of poisoning in relation to vitals and investigation

		Poisoning type				
		OP (n-26) Mean±SD	PARAQUAT (n-10) Mean± SD	Rat poison (n-25) Mean±SD	Other (n-39) Mean±SD	p value
Vitals	PR	98.62±14.98	86.4±16.7	84.08±8.8	87.13±10.44	0.004
	RR	24.62±4.72	22.4±4.6	20.0±2.7	21.33±3.7	0.004
	SBP	130.07±14.62	127.0±12.51	122.72±9.23	123.02±10.52	0.236
	DBP	84.69±8.61	84.0±7.54	80.16±5.96	79.64±12.6	0.245
	Temp	98.52±0.33	98.8±0.44	98.64±0.16	98.66±0.33	.088
Investigations	Hb-1	13.54±1.99	14.29±2.07	13.5±1.47	13.05±2.08	0.309
	TLC-1	12707.69±4337	15580.0±6850.27	8752.0±2553.2	11078±5127	0.001
	TLC-3	11300.0± 5014.6	17942.8± 6626.1	8945.4±1892.8	27633.3± 4480	0.021
	Platelet-1	215576.9± 48376.9	222700± 56186.3	20580.0± 71940.3	298540.5± 350505	0.242
	Platelet-3	230666.6± 44728.9	122333.3± 78111.9	182000.0± 92374.2	211250.0± 56363.1	0.170
	INR-1	1.09±0.13	1.09±0.17	1.3± 0.73	1.06±0.94	0.384
	Urea-1	31.84± 16.4	68.1± 34.6	27.2±11.5	22.5±.7.5	0.000
	Creatinine-1	0.9±0.31	2.9±1.77	0.8±0.1	0.76±0.2	0.000
	AST-1	46.5± 20.4	203.5± 40.4	293.9±129.7	32.9±17.8	0.001
	ALP-1	68.3±21.4	94.6±60.9	94.3±54.7	74.6±14.4	0.112

TLC- Total Leucocyte Count. AST – alanine transaminase, ALP – alkanine phosphatase . p value- <0.05 is significant

No-1 indicates investigation done on day of admission

No-3 indicates investigation done prior to outcome