Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Medicine

Clinical and Epidemiological Profile of Acute Poisoning Among Patients Admitted in Tertiary Care Hospital

Dr. Kiran V Birari[1], Dr Vaibhav Janardhan Pustake[*2]

[1]Assistant Professor, Department of Medicine, SMBT Institute of Medical Sciences and Research Centre, Dhamangoan, Nashik, Maharashtra, India
[2]Assistant Professor, Department of Pediatrics, SMBT Institute of Medical Sciences and Research Centre, Dhamangoan, Nashik, Maharashtra, India

***Corresponding author:** Dr Vaibhav Janardhan Pustake
| **Received:** 11.03.2019 | **Accepted:** 19.03.2019 | **Published:** 30.03.2019
DOI: 10.36347/sjams.2019.v07i03.044

Abstract **Original Research Article**

Background: Acute poisoning is an important medical emergency and common cause of mortality in India. Organophosphorus poisoning and snake bites are important causes of mortality. To plan preventive & treatment measures against acute poisoning, clinical & epidemiological studies are necessary. ***Aim:*** To understand clinical & epidemiological profile of acute poisoning among patients admitted in hospital. ***Material & Methods:*** A descriptive cross-sectional study was conducted in Medicine wards for the period of two years. Total 150 subjects were included in study. ***Results:*** The peak incidence of was between 21 to 30 years of age (38.66%) and declined with increase in age. Percentage of acute poisoning was more common in males (59.33%). Bites & stings was most common (34.66%).Early hospitalization of exposure to poison was seen in maximum number (63%) of cases five deaths were recorded. Respiratory & renal complications were common reasons for deaths. ***Conclusion:*** Stress, male gender, lower socioeconomic status & occupation are common reasons for acute poisoning. First aid and early hospitalization with prompt and effective treatment reduces occurrence of complications & hospital stay.

Keywords: Snake bite, OPC poisoning, PAM, ASV, Fertilizers.

INTRODUCTION

Almost all countries in world are facing problem of poisoning. Factors like the degree of industrialization and urbanization, the type of agricultural activities and the available medical facilities and expertise to prevent and manage toxic exposures have impact on it. So, the magnitude of the problem, the circumstances of exposure and the types of poisoning vary from country to country. Both accidental and intentional poisoning, is a major contributor to mortality and morbidity all over the world. About three million acute cases with 2, 20,000 deaths occur annually [1,2]. Some studies predict that half a million inhabitants die every year as a result of pesticides poisoning [2, 3].

Developing countries share almost 90% cases fatal poisoning [1]. In India, agriculture is a major occupation. Pesticides poisoning is not uncommon [4]. Leading cause of unnatural morbidity as well as mortality in India is Poisoning. Suicidal poisoning in young adults is an enormous economical & physical loss to our Country. Snake bite & drugs are another important form of poisoning.

To understand inter-regional variation in pattern of poisoning, clinical & epidemiological studies are necessary. So this study was planned to understand clinical & epidemiological profile of acute poisoning among patients admitted in hospital.

MATERIALS & METHODS

A descriptive cross-sectional epidemiological study was conducted in Medicine wards of tertiary care hospital in Mumbai. Study period was of two years. Patients with age 13 years and above presenting in emergency department and/or admitted in medical wards & MICU within 24 hrs of exposure, patients withclinical suspicion butdoubtful history of ingestion or inhalation of poison, patients with suicidal as well as accidental exposures to poison& patients presenting with different bites and/or stings were included in study. Patients not willing to participate in study, patients presenting after 24 hrs of exposure, patients of definite h/o dog bite were excluded. Institutional Ethical Committee (IEC) permission was taken before data collection. Data of 150 patients with acute poisoning admitted in hospital was collected in mentioned study period.

After taking valid informed consent in each case, a thorough case history was taken either from the patients or from the attending relatives. Approximate time interval between the ingestion of poisonous agents, bite and institution of treatment was noted. The patients were followed daily to detect early complication & effect of therapy. An attempt was made to find out the exact nature of the compound, mode of exposure (ingestion, inhalational or dermal absorption) and quantity of the compound. The psychosocial history was taken from patients or near relatives to know any underlying psychosocial stress factors. The details of snake bite, scorpion sting or unknown bite were noted. Symptoms were recorded chronologically. Thorough local, general & systemic clinical examination was done to find out clinical evidence of poisoning. Clinical examination especially focused on vital signs, presence of any specific odour, fasciculation, size of pupils. Complications were noted down. Standard operational definitions was prefixed before study and followed throughout study [4].

Data was entered in Microsoft Excel and analysed with IBM SPSS software. Descriptive statistics like mean, median, frequency & proportions were used. Tables & graphs were used to summarize the data.

RESULTS

This study was carried out in a teaching hospital from October 2005 to April 2007 with the aim to study the clinical profile of patients with acute poisoning. One hundred fifty selected patients according to inclusion criteria were studied during this period.

Table no.1 depicts details of sociodemographic profile of study subjects. In the present study, majority of patients (38.67%) were in age group of 21-30 years; while patients of 40 years & above were the least (13%). Median age was 28.4 years. Total number of male patients was 89 (59.33%) and female patients were 61 (40.67%). Thus the incidence of poisoning was more in males with M: F ratio of 1.46:1. The incidence of suicidal poisoning was more common in females (55.74%) while accidental poisoning was more common in males (55.06%). Incidence of poisoning was highest (58.67%) among lower socioeconomic group and was lowest (6.66%) among high socioeconomic group. Most of the patients were from rural area (86%) while there were only 21 (12%) patients from urban population. Out of 74 cases of suicidal poisoning, stress factor with reactive depression was found in 47 (63.51%) cases while it was absent in 27 (36.49%) cases. Other immediate precipitating factors were marital disharmony, economic hardship, disagreement/scolding/quarrel with other family members, attention seeking behaviour.

As shown in figure no. 1, suicidal cases were 74 (49.33%) and accidental cases were 76 (51.67%). Maximum number of cases 68 (45.33%) of poisoning were during summer while the least numb of cases 33 (22%) were observed during winter. Bites and stings were the commonest 52(34.66%) type of poisoning in our study. Poisoning due to pesticides was observed in 26 (17.33%) of cases. Industrial poisoning was the least common (4%) type in the present study while there were 23 (15.33%) of patients in whom type of poison couldn't be ascertained.

As indicated in table no. 2, among bites & stings, snake bites were the most common 25 (48%) bites followed by unidentified bites 14 (27%). Scorpion sting was observed in 11 (21%) cases. The least common bite was rat bite seen in 2 (3.85%) cases. As observed in the table amount of OPC was unknown in maximum number (53.86%) of cases while 46.1% had consumed OPC from 10 to 30 ml. None of the patient in our series had taken OPC less than 10 ml.

Table no. 3 shows, early hospitalization (within 2 hours) of exposure to poison was seen in maximum number (63%) of cases, while patients reaching in the hospital in 4 to 6 hours were 14.1%.The longest duration of reaching to the hospital was 14 hours. In this study, out of 150 patients, 60 cases (40%) were given specific treatment, whereas 90 cases (60%) were managed with supportive or symptomatic treatment. In this study, we observed 100% mortality for patients presenting with GCS score of <8, while it was least (0.69%) for those patients with GCS score >13. In this study, out of 150 cases, total 20 (13.33%) patients developed systemic &/or local complications. The respiratory complications were observed in maximum number of cases [12 cases (60%)], whereas hepatobiliary complication was the least [1 case (5%)]. None of the patients developed local complication at the site of bite/sting. Out of 150 cases, 5 cases died. The overall mortality rate observed was 3.33%. Mortality rate for various bites or stings was 5.77%, which was equal to the mortality rate for pesticide poisoning.

Table-1: Socio-demographic profile of study participants (n=150)

		Frequency	%
Age (Years)	13 to 20	32	21.33
	21 to 30	58	38.67
	31 to 40	41	27.33
	>41	19	12.67
Gender	Male	89	59.33
	Female	61	40.67
Socio-economic status	Lower	88	58.67
	Middle	52	34.67
	Upper	10	6.66
Geographical Status	Rural	129	86
	Urban	21	14
Stress factor (n=74)	Present	47	63.51
	Absent	27	36.49

Table-2: Information about Bites, stings and Organophosphorus compounds (OPCs) poisoning

			Frequency	%
Bites & Stings	Snake bite	Viper	11	21.15
		Cobra	3	5.77
		Krait	1	1.92
		Non-poisonous	10	19.23
	Unknown		14	26.93
	Scorpion sting		11	21.15
	Rat Bite		2	3.85
	Total		52	100
Organophosphorus compounds (OPCs) poisoning	Amount of OPCs poison ingested	1-10 ml	0	0
		10-20 ml	4	15.38
		20-30 ml	4	15.38
		>30 ml	4	15.38
		Total	12	100

Table-3: Clinical profile of study subjects

		NO.	%
Glasgow Coma Scale score	13 to15	145	96.7
	9 to 12	3	2.0
	< 8	2	1.3
Time for hospitalization	<1 HR	53	35.33
	1-2 HRS	42	28
	2-3 HRS	18	12
	3-4 HRS	14	9.33
	4-5 HRS	1	0.67
	5-6 HRS	3	2
	>6 HRS	19	12.67
Treatment	Specific	60	40
	Supportive	90	60
Type of complication	Neurological	3	15
	Respiratory	12	60
	Renal	4	20
	Hepatobiliary	1	5
	Local	0	0
	Total	20	100

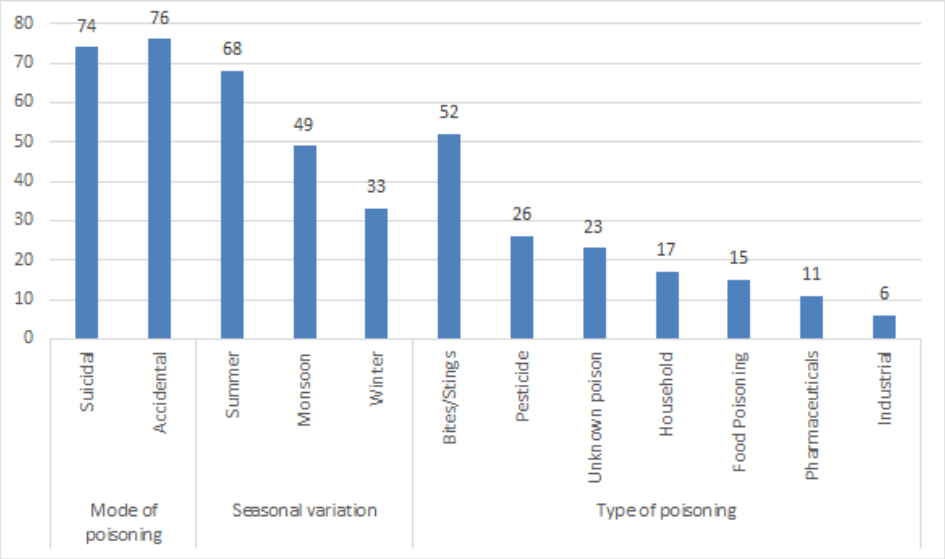

Fig-1: Characteristics of Poisoning (n=150)

DISCUSSION

In the present study, the most common age of presentation was 21-30 years comprising 38.66% of the total cases; while median age was 28.4 years. Our findings are consistent with those of Singh B *et al.* [5] and Kara *et al.* [6] with median age of 28 years and 28.6 years respectively. Acute poisoning is more common in young adults. High degree of stresses, frustration in the events of inability to achieve the targets on professional, educational and socioeconomic fronts are contributing factors to take suicidal decision. In the present study, male to female ratio was of 1.46:1. Our observation of male preponderance is similar to other studies done by Singh B *et al.* [5] &Gargi *et al.* [7] however Lawson & Mitchell [8] observed female preponderance in their study of acute poisoning. Suicidal mode of poisoning was more common in females. Males because of their professional exposure to poison, on account of their ongoing social status are more vulnerable to accidental poisoning. Lower socio-economic class had highest cases which could be correlated with the studies by Singh D *et al.* [9] and Dash *et al.* [10], which showed the incidence of 56% and 58% respectively. Out of 52 cases of various bites/stings, 96.15% patients were from rural area. In 26 cases of pesticide poisoning 80.77% cases were from rural area. These findings matched with Lahori *et al.* [11] with incidence of 81.5% in rural population. Reddy *et al.* [4] Confirmed in his epidemiological study that snake bite is mainly a rural & occupational hazard. Patients of acute poisoning had made an impulsive gesture or determined suicidal attempt. Most of them had been depressed for quite some time. Lawson &Mitchell [8] showed that 30% reactive depression.

In our study, suicidal cases were more as compared to accidental. This is akin to studies done by Singh B *et al.* [5] & Gupta *et al.* [12]. In present study maximum number of cases (45.33%) of poisoning was during summer while the least number of cases (22%) were observed during winter. This matched with the previous studies Dash *et al.* [10] [48%] & Kara *et al.* [6] [45.4%]. There was no significant difference in case of pesticide poisoning. In cases of bites &/or stings, maximum incidence 33 cases (63.5%) was noted during summer. Ashwin *et al.* [13] noted incidence of 70-80% during the period of summer and early monsoon. Dash *et al.* [6] noted incidence of 60%. In present study, Bites and stings were the commonest 52(34.66%) type of poisoning. Studies done by Dash &Mohanty *et al.* [6] & Ashwin *et al.* [13] noted quiet similar findings.

Among bites & stings, snake bites were the most common (48%) bites followed by unidentified bites (27%). Scorpion sting was observed in (21%) cases. The least common bite was rat bite seen in (3.85%) cases. Incidence of snake bites in studies Gupta *et al.* [12] was 8%. In present study, among snake bites, viper bites were the most common followed by bites of non-poisonous snakes. Krait bite was the least common. Reid H [14] in Malaysia reported 66.6% of bites to be influenced by non-poisonous snakes. It appears understandable, that the severity of poisoning should be correlated with the amount ingested. In fact there is no correlation between the dose ingested and the severity of poisoning, as quoted previous study [13]. It may be due to difference in potency, pharmacokinetics of different organophosphorus compounds and the cholinesterase of different patient may not be sensitive to insecticides.

In the present series, early hospitalization (within 2 hours) of exposure to poison was seen in maximum number (63%) of cases, while patients reaching in the hospital in 4 to 6 hours were 14.1%.The longest duration of reaching to the hospital was 14 hours. In a study by Lahori *et al.* [11], Singh B *et al.* [5] &Burrilo *et al.* [15]; 85%, 46% and 64% of patients

were admitted in first 6 hours respectively. This early reporting to the hospital could be at realization of dangers of poisoning, and particularly of snake bites in lay people. However delay in seeking medical help was attributed to prevalent faith in healing by 'Mantras', magic, application of herbal remedies among the lower socio-economic group of population. In this study, we observed 100% mortality for patients presenting with unconsciousness with GCS score of <8, while it was least (0.69%) for those patients with GCS score >13. Singh B *et al.* [5] found that those patients with severe symptoms had a higher risk of mortality. Same also noted that respiratory & renal complications were common.

Stress, male gender, lower socioeconomic status & occupation are common reasons for acute poisoning. First aid and early hospitalization with prompt and effective treatment reduces occurrence of complications & hospital stay.

REFERENCES

1. World Health Organization. Guidelines for poison control. Bulletin. 1999; Geneva, world Health Org. Available at http://www.who.int/ipcs/publications/training_poisons/guidelines_poison_control/en/. [Accessed on 10 January 2019].
2. Sharma BR, Harish D, Sharma V, Vij K. The epidemiology of poisoning: An Indian view point. J Forensic Med Toxicol. 2002;19:5-11.
3. Batra AK, Keoliya AN, Jadhav GU. Poisoning: an unnatural cause of morbidity and mortality in rural India. Journal-Association of Physicians of India. 2003 Oct 1;51:955-9.
4. Reddy KS. The essentials of forensic medicine and toxicology. J Punjab Academy Forensic Med Toxicol. 2005;5:53-58.
5. Singh B, Unnikrishnan B. A profile of acute poisoning at Mangalore (South India). Journal of clinical forensic medicine. 2006 Apr 1;13(3):112-6.
6. Güloglu C, Kara IH. Acute poisoning cases admitted to a university hospital emergency department in Diyarbakir, Turkey. Human & experimental toxicology. 2005 Feb;24(2):49-54.
7. Gargi J, Rai H, Chanana A, Rai G, Sharma G, Bagga IJ. Current Trends of Poisoning-A Hospital Profile. age. 2003;69:30-88.
8. Lawson AA, Mitchell I. Patients with acute poisoning seen in a general medical unit (1960-71). Br Med J. 1972 Oct 21;4(5833):153-6.
9. Singh D, Jit I, Tyagi S. Changing trends in acute poisoning in Chandigarh zone: a 25-year autopsy experience from a tertiary care hospital in northern India. The American Journal of Forensic Medicine and Pathology. 1999 Jun 1;20(2):203-10.
10. Dash SK, Sitarama Raju A, Mohanty MK, Patnaik KK, Mohanty S. Sociodemographic profile of poisoning cases. Journal of indian academy of forensic medicine. 2005;27(3):133-8.
11. Lahori UC, Sharma DB, Gupta KB, Gupta AK. Snake bite poisoning in children. Indian pediatrics. 1981 Mar;18(3):193.
12. Gupta P, Kumar A, Singh SP, Prakash M, Gupta M, Kumar P. Pattern of cases of acute poisoning in a rural tertiary care center in northern India. National Journal of Community Medicine. 2016;7(4):307-10.
13. Chaudhari A, Kumawat DC. A study of patients with acute poison: a single center experience. Int J Res Med Sci. 2018;6:1450-3.
14. Reid HA. Myoglobtnuria and sea-snakebite poisoning. Br Med. J 1961: 1285-90.
15. Burillo-Putze G, Munne P, Duenas A, Pinillos MA, Naveiro JM, Cobo J, Alonso J, Clinical Toxicology Working Group, Spanish Society of Emergency Medicine (SEMESTOX. National multicentre study of acute intoxication in emergency departments of Spain. European journal of emergency medicine. 2003 Jun 1;10(2):101-4.