

Pattern of Acute Poisoning Presenting at a Tertiary Care Hospital

Surya Diana Sande, Padmaja Uday kumar

Department of Pharmacology Father Muller Medical college and hospital, Mangalore- 575002, Karnataka, India

Corresponding Author: Surya Diana Sande

Abstract: Acute poisoning is a medical emergency. It is important to know the nature, severity and outcome of acute poisoning cases in order to take up appropriate planning, prevention and management techniques. This study aimed to assess the pattern and outcome of acute poisoning cases in a tertiary care hospital in Karnataka. This is a retrospective hospital record-based study which included 120 cases. Data on Sociodemographic details, type of poisoning, outcome, circumstances of poisoning (suicidal/accidental) and treatment given were collected in the prestructured proforma. Poisoning was more common among males (61.67%) compared to females (38.33). Most cases of acute poisoning presented among 21- to 30-year age group (51.7%). A majority of poisoning cases (32.5%) were due to organophosphorus compound (OPC). Total mortality was found to be 12.5%. Poisoning is more common in young males. The overall mortality is mainly contributed by self-poisoning with insecticides and corrosives. Early care in a tertiary care center may help to reduce mortality in India.

Keywords: Acute poisoning, pattern and outcome, tertiary care hospital

Date of Submission: 29-08-2017

Date of acceptance: 16-09-2017

I. Introduction

Poison is defined as, a substance (solid, liquid or gas) which if introduced in a living body or brought in contact with any part thereof will produce ill health or death by its constitutional or local effects or both^[1]

The World Health Organization (WHO) conservatively estimates that about 3 million cases of poisoning occur every year in the world and about 2,20,000 deaths occur due to poisoning. Of these 99% of fatal poisoning occurs in developing countries particularly among agricultural workers^[2] With the progress in the industrial and agricultural field and advances in medical sciences a vast number of insecticides have become available, which on exposure may produce severe toxicity.

Apart from ingested poison, poisoning due to animal bites especially snake bites (ophitoxemia) and scorpion stings are quite common in India. The key to survival lies in early diagnosis followed by rapid decontamination and definitive therapy.

The commonest cause of poisoning in India and other developing countries is by pesticides, the reasons being agriculture based economics, poverty, unsafe practices, illiteracy, ignorance and lack of protective clothing and easy availability of highly toxic pesticides.^[3]

Owing to the magnitude of the problem, a study on the pattern of poisoning is important and relevant. It will help us to gain a better understanding of the current trend in acute poisoning and the necessary antidotes and emergency medical treatment essentially required at the emergency department of all hospitals.

II. Objectives

1. To investigate the pattern of acute poisoning cases in a tertiary care hospital in Karnataka.

III. Materials and Methods

Study type

This retrospective hospital record-based study was conducted in a tertiary care hospital attached to a medical institution in Karnataka.

Selection criteria

The study included 120 cases of various acute poisoning due to drugs and chemicals in people above the age of 12 years in the year 2016. Cases of snake bite were also included in the study. But cases with food poisoning and allergic reactions to drugs were not included.

Mode of data analysis

Mode of data analysis was done with respect to age, sex, educational qualification, name of poisonous substance, duration of hospitalization, outcome, circumstances of poisoning (accidental/suicidal) and treatment given.

IV. Results

A total of 120 patients of various poisoning cases were studied. Incidence was more common among males (61.67%) compared to females (38.33 %). Most cases of acute poisoning presented in the age group between 21 and 30 years (51.7%) followed by 31 to 40 year age group (17.5 %). Majority of patients did not have a formal education (35.8%)(table 1)

Table 1. Sociodemographic details of patients

GENDER	Frequency	Percentage
Male	74	61.67
Female	46	38.33
AGE		
12-20	17	14.2
21-30	62	51.7
31-40	21	17.5
41-50	10	8.3
51-60	7	5.8
>60	3	2.5
EDUCATIONAL QUALIFICATION		
No formal education	43	35.8
Primary	26	21.7
Secondary	38	31.7
Graduate	13	10.8

A majority of the poisoning cases (32.5%) were due to organophosphorus compound (OPC) followed by snake bite (30.8%), drugs (10.0%), rat poison (6.7%), corrosives (4.2%) and others. Drugs used were phenobarbitone, diazepam, cough syrups and mixture of tablets/ capsules. Corrosives were acids and kerosene. Miscellaneous causes were unknown (15.8%). Total mortality from all causes of poisoning was 12.5 % and was highest among patients with corrosive poisoning (60 %) followed by a mortality of 13.5% in OPCs. (table 2)

It was found that 65.8 % (79) of cases were of intentional poisoning for suicidal attempt and 34.16 % (41) of cases had accidental poisoning. Median hospital stay was 4 days. Only 10 patients stayed in the hospital for more than 15 days.

Table 2 . Types of poisoning and mortality

TYPE OF POISON	Frequency	Mortality
Organophosphorus	39 (32.5%)	7 (13.5 %)
Snake bite	37 (30.8%)	3 (8.1 %)
Drug overdose	12 (10 %)	0
Rat poison	8 (6.7 %)	0
Corrosives	5 (4.2 %)	3 (60 %)
Miscellaneous	19 (15.8 %)	2 (10.5 %)

V. Discussion

In the present study, pesticides followed by snake bite were the two most common types of poisoning. A study conducted in Pondicherry revealed a rapidly increasing trend in the incidence of OPC poisoning over a 3-year period.^[4] Other studies also showed that OPCs are the most commonly used poisoning substances.^[5,6] In contrast, some other studies showed that majority of poisoning admissions were due to pharmaceutical agents.^[7,8] A study conducted at the All India Institute for Medical Sciences, New Delhi, showed that drugs (18%) and insecticides (12.8%) are the most common agents out of a total of 726 poisoning cases studied. Out of this insecticide group, carbamates formed the largest group followed by OPCs and organochlorine compounds.^[7] This difference in the type of poisoning seen within the country may be due to the difference in the pattern of use and availability of pesticides.

In this study, majority of the poisoning cases presented in the 21 to 30 year age group (62, 51.7%). This age group are most active, physically, mentally and socially and hence more prone to stress. Similar findings were observed in other studies.^[5,7,9] Males dominated the present study. This high proportion of poisoning among males might be due to change in lifestyle and cultural patterns in this area and other studies.^[9] In our study it was found that poisoning is more prevalent among the people who have no formal education (35 %) This group is more vulnerable to poisoning which may be due to the fact that they are under financial strain and related hardships. In a study conducted in Kathmandu the results indicated that equal number of literate and illiterate patients were prone to poison consumption.^[10]

Majority of the patients (65.8 %) consumed the poison with suicidal intent as compared with 34.16 % of the patients exposed accidentally. The previously mentioned study conducted in Kathmandu (16-65 years

age group) reported that 97% of the poisoning cases admitted in a hospital were due to suicidal attempt.^[10] However, this study did not include snake bite cases unlike in our study. In our study, the overall mortality was found to be 12.5%. Similar data were also obtained by a study which reported an overall mortality rate of 17.3%.^[11] Other studies showed it as 3% - 4%.^[6,8] Mortality in the present study is probably higher because of a higher number of pesticide and corrosives poisoning cases. The hospitalization time for the poisoning cases in our study, varied between 1-26 days with a mean duration of hospitalization of 4 days.

Patients diagnosed as poisoning cases were initially brought to emergency department of our hospital. Treatment was started immediately at the emergency department. Gastric lavage with distilled water and normal saline was administered to patients in whom it was indicated. Oxygen was started in most of the patients. The patients were shifted to ICU for further management. Atropine 1-2 mg bolus intravenously was administered to cases of organophosphorous poisoning followed by pralidoxime 1gm IV infusion bolus. Glycopyrolate 1gm IV infusion bolus was given to patients in severe conditions. This was followed by adjuvant therapy.

In cases of drug poisoning first aid - gastric lavage was given and antidote like atropine, glycopyrolate and acetylcysteine were commonly used for paracetamol poisoning, followed by antibiotics, anti-ulcer agents and antiemetics. Adjuvant therapy was administered based on the history of exposure. During the management of snakebite, patients received anti snake venom and adjuvant therapy with antibiotics, adrenergic agents, antiulceratives and antiemetics for relief of symptoms. In the management of rat poisoning (zinc phosphide) gastric lavage was carried out in all the patients. Antidotes i.e like atropine, pralidoxime and the adjuvant therapy were administered as required. The different categories of drugs given to the 120 patients were antidotes through IV routes followed by anti snake venom through IV route, antibiotic through IV routes or oral route, anti ulceragents through IV route and oral, adrenergic drugs through IV route, antiemetics through IV route and orally, analgesic through IV routes, oral & antipyretic agents through IV route and orally. All patients who consumed poison with suicidal intentions underwent psychiatric workup and were given psychiatric counseling and drug therapy

The retrospective record-based nature and relatively small sample size are the limitations of our study. Some of the information such as miscellaneous poisoning and types of snakes were not documented in the records for analysis. The study confirms the fact that the prevention and treatment of poisoning should merit a high priority in the healthcare of the local population.

VI. Conclusion

Poisoning remains an important method of deliberate selfharm and carries a significant impact on morbidity and mortality. The pattern and magnitude of poisoning are thus multidimensional and demand multi-sectoral approach for facing this problem. Awareness and education about the potential toxicity of commonly used pesticides and drugs may help in reducing the burden of poisoning. The present study indicates that younger age (less than 30 years), male sex, low educational level are the significant risk factors associated with poisoning. Pesticide poisoning was the most common method of suicidal poisoning, thus reflecting a positive association between impulsive suicidal behaviour and easy availability of pesticides in the region. Public education and timely psychosocial management of the vulnerable cases through a protracted community based mental health program may help to reduce morbidity and mortality

The cost of medication and hospitalization for the poisoning cases was not assessed in our study. However all the medications used to treat patients, in addition to the cost of hospital stay can be assumed to be high and a great burden on the patient, especially taking into consideration that most patients are of the low income group. If we were to consider the cost and outcomes of the poison cases reported to the hospital, it is recommended that, we should have to establish a poison information centre (PIC) which should be networked with other poison information centres in India and with developed countries which can help in identifying the poison and managing the cases. We as a developing country should handle the multifunctional tasks and provide broad toxicological information service, which can disseminate information to the public regarding poison prevention. Various health-care centres need to organize mass education programs to create awareness and stress the significance of a proper history to minimize the mortality due to poisoning. This study highlighted the need for a poison information center for the better management and prevention of poisoning cases.

References

- [1] KSN. Reddy, The essentials of forensic medicine and Toxicology (Hyderabad: Sugunadevi, 2013)
- [2] WHO: Environmental Health Criteria 2010.
- [3] L Vijaykumar, Indian research on suicide, Indian Journal of Psychiatry, 52, 2010, 25-8.
- [4] A Basu, Study of Organophosphorus poisoning over 3 years, Journal of association of Physicians of India, 36, 1988, 21.

- [5] B Unnikrishnan, B Singh, A Rajeev, Trends of acute poisoning in South Karnataka, Kathmandu University Medical Journal, 3, 2005, 149-54.
- [6] M Thomas, S Anandan, PJ Kuruville, PR Singh, S David, Profile of hospital admissions following acute poisoning-experiences from a major teaching hospital in south india. Adverse Drug Reactions and Toxicology Review,19,2000, 313-17
- [7] RK Das, Epidemiology of Insecticide poisoning at A.I.I.M.S Emergency Services and role of its detection by gas liquid chromatography in diagnosis,Medico update,7, 2007, 49-60.
- [8] R Rajasuriya, R Awang, SB Hashim,HRRahmat, Profile of poisoning admissions in Malaysia,Human Experimental Toxicology,26,2007;73-81.
- [9] SK Dash, SR Aluri, MK Mohanty, KK Patnaik, S Mohanty, Sociodemographic profile of poisoning cases, Journal of Indian Academy of Forensic Medicine, 27, 2005, 133-8.
- [10] SB Marahatta, J Singh, R Shrestha, R Koju, Poisoning cases attending emergency department in Dhulikhel Hospital- Kathmandu University Teaching Hospital, Kathmandu University Medical Journal, 7(2), 2009, 152-6.
- [11] S Singh, BK Sharma, PL Wahi PL, Spectrum of acute poisoning in adults, Journal of Associate Physicians of India,32, 1984, 561-3.