



ORIGINAL RESEARCH PAPER

Pharmacology

RETROSPECTIVE ANALYSIS OF POISONING CASES ADMITTED IN A TERTIARY CARE HOSPITAL

KEY WORDS: Poisoning, organophosphorus, morbidity, mortality

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ABSTRACT

Poisoning is a medical emergency causing significant morbidity and mortality throughout the world. It is important to know the pattern and severity of poisoning cases. This study was conducted to assess the pattern of acute poisoning cases in a tertiary care hospital in Assam. It is a retrospective hospital record based study. 122 cases of acute poisoning admitted in medicine ward were included. Poisoning was more common among males (77.05%) compared to females (22.95%). Most cases of acute poisoning presented among 21-30 year age group (51.64%). A majority of poisoning cases (37.70%) were due to organophosphorus compound. Associated co-morbid conditions were found in 27 cases (22.13%). The incidence of poisoning and morbidity and mortality can be reduced by developing and implementation of effective prevention strategies.

INTRODUCTION:

Poison is a substance which endangers life by severely affecting one or more vital functions [1]. However, Paracelsus (1493-1541) formerly stated that “the dose makes the poison,” meaning that any substance can be harmful if taken in the wrong dosage [2]. Poisoning can occur in many ways following therapeutic and non-therapeutic exposures to drugs or chemicals. Potential scenarios for the occurrence of poisoning are therapeutic drug toxicity, exploratory exposure by young children, environmental exposure, recreational abuse, errors of prescribing or dispensing or administering, purposeful administration for self-harm and purposeful administration to harm other [3]. In India, according to the National Crime Records Bureau reports, poisoning was estimated to contribute 26.7% of the 134516 suicides recorded in the country in 2018 [4]. In developing countries, the frequency of self-harm is more difficult to estimate because patients may be reticent in admitting to deliberate poisoning. Household and agricultural products such as pesticides and herbicides are more freely available, are common sources of poisoning and are associated with a much higher case fatality [5]. The past 3 to 4 decades have seen a remarkable change in the incidence and type of poisoning. A number of new compounds have been added to the list of potentially poisonous materials. Acute poisonings are on the rise in many countries and similar trends have been observed in India as well. It is important to realise that poisonings are largely preventable and majority of poisoning cases die within 1 hour to 6 hour of exposure to poison. Therefore, it is important to have a sound knowledge in the subject of poisoning [6]. It is important to know the nature and severity of poisoning in order to take appropriate preventive measures. Information available in our region with regard to acute poisoning is limited. Hence studies of this kind will be a useful tool in developing appropriate management guidelines and preventive measures.

MATERIALS AND METHODS:

It was a retrospective hospital record based study done at Gauhati Medical College and Hospital in Assam for six months from 1st September 2014 to 28th February of 2015. The study was conducted after obtaining Institutional Ethical clearance. Permission was obtained from Superintendent of the hospital to allow us to access the information from the patients' case notes in the record section, strictly for the purpose of this research. The study included 122 cases of various poisonings admitted in the hospital due to exposure to drugs and chemicals. The cases were selected according to the following criteria.

Inclusion Criteria:

Patients with various poisonings due to drugs and chemicals admitted in medicine ward.

Exclusion Criteria:

The patients of snake bite, insect bite, food poisoning and allergic reaction to drugs were excluded in the study.

Patient data relevant to the study was obtained from history sheets and treatment charts/ case sheets. The relevant information was collected on a suitably designed patient data collection form. Data regarding age, gender, residence, time elapsed after intake, type of poison, manner and route of poisoning, duration of hospitalization and outcome was collected. The data was analyzed using standard statistical methods.

RESULTS:

In the present study, 122 cases of poisoning were reviewed retrospectively. Among them 115 cases (94.26%) were of intentional poisoning followed by accidental (3 cases, 2.46%), homicidal (3 cases, 46%) and unknown (1 case, 0.82%) respectively. In all the cases, the route of exposure was oral. Males (94 cases, 77.05%) outnumbered females (28 cases, 22.95%). Majority of cases were in the age group of 21-30 years (63 cases, 51.64%) followed by age group 11-20 years (31 cases, 25.41%), 31-40 years (12 cases, 9.83%), 41-50 years (9 cases, 7.38%), 51-60 years (4 cases, 3.28%) and 61-70 years (3 cases, 2.46%). The patients from urban areas (90 cases, 73.77 %) are more than from rural areas (32 cases, 26.23%) (Table 1).

Table 1: Sociodemographic Details Of Patients

Gender	Frequency	Percentage
Male	94	77.05
Female	28	22.95
Age (years)		
11-20	31	25.41
21-30	63	51.64
31-40	12	9.83
41-50	9	7.38
51-60	4	3.28
61-70	3	2.46
Residence		
Rural	32	26.23
Urban	90	73.77

The commonest poisoning agent was organophosphorus compounds (46 cases, 37.70%) followed by phenol (24 cases,

19.67%) consumed mainly during evening hours (Table 2). All the patients of the study were treated successfully with no mortality. In 7 (5.74%) cases, alcohol was taken along with poison.

Table 2: Type Of Poison

Type of poison	Frequency	Percentage
Organophosphorus	46	37.70
Rat killer poison	7	5.74
Drugs	8	6.56
Plant products	3	2.46
Insecticides	8	6.56
Mosquito repellants	3	2.46
Phenol	24	19.67
Miscellaneous	9	7.38
Unknown	14	11.47

Table 3: Duration Of Hospital Stay

Sl. No.	Hospital stay (days)	Frequency	Percentage
1	1-4	113	92.62
2	5-8	8	6.56
3	9-12	1	0.82

Psychiatric evaluation was done in 50 patients (40.98%). Comorbid conditions were found in 27 cases (22.13%). In 27 (22.13%) of patients, poisons were used for self-harm on an impulse. The time elapsed between the poison intake and the start of the treatment, varied from 30 minutes to one day or more and a majority of the cases 83(68.03%) reached within six hours following the exposure. Most of the patients had a hospital stay of 1-4 days (113cases, 92.62%) (Table 3). One patient had taken poison for the second time. 14 numbers of patients were referred from other health facilities.

DISCUSSION:

The extent of poisoning, morbidity and mortality in a society reflects the socio-economic as well as the mental state of the society. Pesticide poisoning from occupational, accidental and intentional exposure is a major problem in developing countries [7]. In this study 122 poisoning patients were analysed over a period of six months. Among 122 cases, 115 (94.26%) were due to attempted suicide. Various national and international studies have projected an increase in the intentional poisoning. The suicide mode was found 95% and 98.66% in studies conducted in tertiary care hospital in Kerala and Tamil Nadu [8][9]. The commonest poisoning agent was organophosphorus compounds (37.70%). Other studies conducted in tertiary care hospital attached to a medical institution in Karnataka (32.5%) and of western Maharashtra (27%) showed that organophosphorus compounds are the most commonly used poisoning substances. [7][10]. There were males (77.05%) more than (22.95%) females. This finding correlates with the study conducted at Kempegowda Institute of Medical Sciences and Research Centre Hospital, Bangalore, where the results showed that males were more vulnerable than females to poisoning [11]. Majority of the cases were in the age group of 11-30 years and among them 63 (51.64%) were in the age group of 21-30 years. These age groups are the most active, physically, mentally and socially and hence more prone to stress. A study done in a tertiary care hospital in Karnataka revealed that the poisoning was most common in the age group between 21-30 years (51.7%) [10]. The route of poisoning was oral in all cases during the study period similar to other studies. [9][12].

The study had more number of cases from urban areas (73.77%) compared to the rural population. Similar findings were observed in the study conducted in a tertiary care hospital Bangalore which indicated that poisoning in urban population(66.5%) were more when compared with rural population [11]. Of the total cases, 92.62% had a hospital stay of 1-4 days. In a study from Kerala, 83.3% patents were discharged in a week [12]. Psychiatric evaluation was done in 50 patients (40.98%). Associated comorbid conditions like

depression, adjustment disorder, somatoform disorder, acute and transient psychosis, alcoholism were found in 27 cases (22.13%) and managed them with psychiatric counselling and drug therapy. Similar findings (23.33%) were obtained in study done in a tertiary care hospital in Tamil Nadu [9]. Physical and mental disorders motivate such persons to consume poison [9]. Additional risk factors are prominent in India. A social and public health approach acknowledges that suicide is preventable, and promotes a framework in integrated system of interventions across multiple levels within society including the individual, the family, the community and the health care system [13].

CONCLUSION:

Our study was hospital based and not population based, we could not make conclusion about the incidence of acute poisoning. It is possible that some patients with minor poisoning were treated in primary health centres and never presented in our hospital. The study clearly highlights the profile of poisoning cases admitted to Gauhati Medical College & Hospital over a period of six months from September 2014 to February 2015 showing that males of 21-30 years of age group are major victim. The commonest poisoning agent was organophosphorus compounds. Most of them consumed during evening hours with a suicidal intention. Patient with intentional poisoning must undergo psychiatry consultation during their stay in the hospital which will minimize the risk of next attempt of self-harm. Early diagnosis and treatment of psychiatric disorder is the target area for potential intervention to reduce cases of deliberate self-harm. Awareness and education about the potential toxicity of commonly used pesticides may help in reducing the burden of poisoning.

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