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EPIDEMIOLOGICAL STUDY OF POISONING IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Poisoning in various forms is an important cause of mortality and morbidity. It occurs in all societies, across all racial and socio economic groups. The nature of poison used varies in different parts of the world and may vary even in different parts of the same country depending on the socioeconomic factors and cultural diversity. Hence the present study was done to know the epidemiological pattern of acute poisoning in a tertiary care hospital. This was a retrospective study conducted in a tertiary care hospital in South India, data was obtained from medical records department from April 2011 to March 2014. Data regarding age, sex, time elapsed after intake, type of poison, circumstances of poisoning, chemical type, time to present to hospital, duration of hospitalization, severity and outcome were collected. Maximum cases of poisoning were in males and in the age group of 31- 40 years followed by 21-30 years. Majority of poisoning cases were due to organophosphorus followed by drugs and rat/lice killer. Most common organophosphorus compound consumed was Endosulphen followed by baygon and diazinon. The drugs used for poisoning were alprazolam, diazepam, cough syrups, paracetamol, iron tablets and mixture of tablets. Most cases were suicidal 239 (76.9%), only one case was homicidal. Mortality was highest in corrosive poisoning followed by organophosphorus and kerosene. Most common time of consumption of poison and mortality was 12 noon to 6 pm. Most common season of consumption of poison was rainy season from June to August and the mortality was highest in summer season. Mortality was highest when the time lapse was between 5-10 hours and when hospital stay was more than 10 days. Epidemiological studies on poisoning will help in identifying patterns and patient profile of acute poisoning and help in formulating more effective preventive and management guidelines.

Keywords: Organophosphates, Poisoning, Suicide, Emergency department.

INTRODUCTION

Poisoning in various forms is an important cause of mortality and morbidity. It occurs in all societies, across all racial and socio economic groups [1]. The nature of poison used varies in different parts of the world and may vary even in different parts of the same country depending on the socioeconomic factors and cultural diversity. A recent study found considerable difference between North India and South India [2]. Management of these critically ill patients will greatly

improve if the common causes of poisoning are properly defined [3].

It has been estimated that, in India five to six persons per lakh of population die due to acute poisoning every year [4]. Poisoning is the fourth common cause of mortality in India [5]. 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. In developed countries, poisoning deaths are mainly due to detergents, cleansing agents, paracetamol, carbon monoxide and cosmetic products. In India, insecticides and other agrochemical fertilizers are used to a greater extent and the poisoning with such products are more common.

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In poisoning cases, several factors contribute to the mortality and morbidity, including the toxic potential of the poison, the speed with which the person seeks clinical attention following exposure to poison, and the availability of effective medical treatment [6]. Hence the present study was done to know the epidemiological pattern of acute poisoning in a tertiary care hospital.

MATERIAL AND METHODS

This was a retrospective study conducted in a tertiary care hospital in South India, data was obtained from medical records department from April 2011 to March 2014. Data regarding age, sex, time elapsed after intake, type of poison, circumstances of poisoning, chemical type, time to present to hospital, duration of hospitalization, severity and outcome were collected. Cases with food poisoning, allergic reactions to drugs, snake bite and insect bite were not included in the study. The data was recorded and analyzed using Microsoft Excel (2007 version) and the results are explained in frequency and percentage.

RESULTS

A total of 312 cases were included in the final analysis. The age and gender distribution of the cases is shown in table 1.

Maximum cases of poisoning were in males and in the age group of 31- 40 years followed by 21-30 years. The type of poisoning and mortality associated is shown in table 2.

Majority of poisoning cases were due to organophosphorus followed by drugs and rat/lice killer. Most common organophosphorus compound consumed was Endosulphen followed by baygon and diazinon. The drugs used for poisoning were alprazolam, diazepam, cough syrups, paracetamol, iron tablets and mixture of tablets. Most cases were suicidal 239 (76.9%), only one case was homicidal. Mortality was highest in corrosive poisoning followed by organosphorus and kerosene.

The occupation of the poisoning cases is shown in table 3.

Most common occupation was farmer followed by housewife and laborers. The association between time of consumption of poison and mortality is shown in table 4.

Most common time of consumption of poison and mortality was 12 noon to 6 pm. Most common season of consumption of poison was rainy season from June to August and the mortality was highest in summer season.

The association between time lapse, hospital stay and mortality is shown in table 5. Mortality was highest when the time lapse was between 5-10 hours and when hospital stay was more than 10 days (percentage wise).

Table 1. Distribution of Enterococcus species among clinical specimens

Age group (Years)	Male	Female	Total
1-10	2	3	5
11-20	5	9	14
21-30	46	34	80
31-40	68	47	115
41-50	32	19	51
51-60	19	14	33
>60	10	4	14
Total	182(58.3%)	130(41.6%)	312

Table 2. Type of poison and mortality

Type of poisoning	Number of patients (%)	Mortality (%)
Organophosphorus	119 (38.1)	11 (9.2)
Drugs	51 (16.3)	1 (1.9)
Alcohol	32 (10.2)	0
Corrosives	28 (8.9)	5 (17.8)
Toilet cleaning agents	24 (7.6)	1 (4.1)
Rat/lice killer	40 (12.8)	0
Kerosene	12 (3.8)	1 (8.3)
Others	6 (2.9)	0

Table 3. Occupation of poisoning cases

Occupation	Number	Percentage
Student	25	8
Laborer	46	14.7
Farmer	105	33.6
Driver	32	10.2

Housewife	68	21.7
Business man	19	6
Govt. Servant	7	2.2
Private job	4	1.2
Others	6	1.9

Table 4. Time of consumption and mortality

Time of Consumption	N (%)	Mortality
TIME		
6 am to 12 noon	45 (14.4)	2 (4.4)
12 noon to 6 pm	198 (63.4)	9 (4.5)
6 pm to 12 mid night	55 (17.6)	4 (7.2)
12 mid night to 6 am	14 (4.4)	4 (28.5)
SEASON		
Summer (Mar, Apr, May)	59 (18.9)	5 (8.4)
Rainy (Jun, Jul, Aug)	166 (53.2)	9 (5.4)
Spring (Sept, Oct, Nov)	68 (21.7)	4 (5.8)
Winter (Dec, Jan, Feb)	19 (6)	1 (5.2)
Total	312	19

Table 5. Association between time lapse, hospital stay and mortality

Time Lapse in Hours	N (%)	Mortality
Upto 1 hour	35 (11.2)	2 (5.7)
1-3 hours	178 (57)	3 (1.6)
3-5 hours	86 (27.5)	8 (9.3)
5-10 hours	12 (3.8)	4 (33.3)
>10 hours	2 (0.6)	2 (100)
Hospitalization in days		
Upto 1 day	25 (8)	1 (4)
1-3 days	95 (30.4)	6 (6.3)
3-7 days	141 (45.1)	7 (4.9)
7-10 days	44 (14.1)	2 (4.5)
10-20 days	5 (1.6)	2 (40)
> 20 days	2 (0.6)	1 (50)

DISCUSSION

In developing countries like India, poisoning is a major health problem and the demographics of poisoning related to type of poison, morbidity and mortality varies [4, 7]. Maximum cases of poisoning were in males and in the age group of 31- 40 years followed by 21-30 years. Similar pattern of age distribution have been reported from other studies [8-10]. The age group between 20-40 years, are the most active one, both physically and mentally and are more prone to stress.

Most cases (76.9%) were suicidal, one case was homicidal and rest cases were accidental poisoning. Other studies from India [10-12] indicate same pattern. Majority of poisoning cases were due to organophosphorus followed by drugs and rat/lice killer. Most common organophosphorus compound consumed was Endosulphen followed by baygon and diazinon. The drugs used for

poisoning were alprazolam, diazepam, cough syrups, paracetamol, iron tablets and mixture of tablets.

Wide use of pesticides in our country, the ease availability and low cost are probably some of the reasons why organophosphorus compounds are used commonly employed for self- poisoning [11, 12, 2]. Other studies have reported same findings. But some studies have reported drugs and snake as the most common poison [8, 13]. This difference in the type of poisoning seen within the country may be due to geographical variation, the pattern of use and availability of various poisons.

Most common occupation was farmer followed by housewife and laborers. This finding is similar to other studies but the incidence differs [14, 15]. In this study, a majority of the cases consumed poison during the afternoon i.e. 12 noon to 6 pm (63.4%), mortality was high during 12 midnight to 6am (table 4). Most common season

of consumption of poison was rainy season from June to August and the mortality was highest in summer season. These findings are similar to other studies [16-18].

Time lapse between consumption of poison and arrival at the hospital is shown in table 5. Mortality was highest when the time lapse was between 5-10 hours and when hospital stay was more than 10 days (table 5). Other studies have reported similar findings [17, 19]. The mortality rate in the present study was 6.08%, which correlates with other studies [18,20]. Epidemiological studies on poisoning will help in identifying patterns and patient profile of acute poisoning and help in formulating more effective preventive and management guidelines.

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CONCLUSION

The current study indicated that most of the poisoning cases involved young age group particularly males. Majority of poisoning cases were due to organophosphorus followed by drugs and rat/lice killer. These type of studies should be conducted at regular intervals which will help in identifying changing trends in poisoning and help to formulate effective diagnostic and management guidelines.

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CONFLICT OF INTEREST

None