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PATTERN OF CASES OF ACUTE POISONING IN A RURAL TERTIARY CARE CENTER IN NORTHERN INDIA

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ABSTRACT

Introduction: Poisoning is a common medico-social problem. It is a significant contributor to morbidity and mortality. Our study is to determine the socio demographic profile of the poisoning cases reported and to find out the pattern of poisoning cases at a tertiary care hospital in rural set up.

Method: Participants comprised of acute poisoning admissions to the emergency of UPRIMS & R, Saifai, Etawah, U.P. during 8 months period. Data regarding pattern of poisoning, basic demographics and drug utilization were collected by retrospective review of patient records.

Results: Major poisoning cases were observed in the age group between 21-30 years (39.09%). The populations with possibility of exposure to poisoning in their occupations were farmers (41.5%), housewives (31.2%) and students (18.8%). The maximum numbers of poisoning cases reported were due to organophosphorus (57.1%).The number of intentional poisoning cases (91.9%) were more when compared to accidental poisoning cases (5.2%).

Conclusion: Prevailing treatment protocols require updating on proper guidelines for better management of poisoning. Pattern and magnitude of poisoning are multidimensional and demand multi-sectoral approach for facing this problem. There is need for stringent pesticide regulation laws and counselling and training programs to reduce incidence of poisonings.

Key words: Poisoning, pattern, organophosphorus, rural

INTRODUCTION

Poisoning or intoxication is occurrence of deleterious effects due to exposure to a foreign chemical or a xenobiotic.[1] Poisoning can be suicidal, accidental or homicidal. It is a significant contributor to morbidity and mortality. Poisoning is a medical emergency. Patient is invariably rushed to the hospital at the earliest possible moment, irrespective of type of poison ingested.[2]

According to W.H.O., three million acute poisoning cases with 2, 20,000 deaths occur annually. Of these, 90% of fatal poisoning occurs in developing countries particularly among agricultural workers.[3] More than 50,000 people die every year from toxic exposure in India.[4]

Toxicity of poisons and present medical services ensure that mortality from poisoning is greater in tropics than in developed countries.[5] Cases of poisoning depends on availability of poisons, socio economic status, religious and cultural influences, occupation prevalent in the region and likewise.[6] Reducing deaths due to poisoning requires effective medical management of acute poisoning. Knowledge about poisoning cases pattern in region is important for early diagnosis and prompt treatment. This is essential for introducing the new and evaluating the old preventive measures at regular intervals.[6]

The aim of the present study was to know the actual magnitude, pattern and profile of poisoning at a tertiary care hospital in the U. P. west region.

This study was focused on poisoning cases reported in a particular area, to improve the management and thereby prevent deaths.

MATERIALS AND METHODS

The study was an observational retrospective study conducted at UPRIMS & R, Saifai, Etawah tertiary care hospital. The data over 8 month period (June 2015-jan 2016) was collected for the study. The primary data sources included the medical records department and the hospital billing databases.

The complete research was done with the permission granted by the Human ethics committee of the institution. A total 243 cases of poisoning were analyzed during this period. Data regarding demographic profile, diagnosis, clinical assessment, treatment data, co-morbid conditions, other investigational details, treatment outcome related parameters data were recorded. The clinical diagnosis of the type of poison consumed was based on documented history, presentation of the remaining stuff or container from which the poison had consumed, gastric aspirates and suggestive clinical manifestations. Food poisoning, near drowning and drug reaction cases were excluded.

Statistical Analysis was carried out following data entry. Descriptive statistics were used for demographic details. Categorical data of the determinants were analyzed using the chi square test. P value <0.05 was considered to be significant. IBM SPSSv22 was used for the statistical analysis.

RESULTS

In the present study the Male: Female ratio was 1.3:1 (57.58 Males and 42.42 Females). Male outnumbered the females. Highest cases were reported in age group of 21-30 years and then showed a progressive fall as the age progresses with the geriatric age group showing least vulnerability to poisoning. The poisoning in extreme of ages was less observed. Our study clearly showed vulnerability of poisoning among different sections of the population. (Table-1).In study 140 (57.43%) cases were married and 103 (42.57%) cases were unmarried.

The Glasgow Coma Scale or GCS is a neurological scale that provides a reliable, objective way of recording the conscious state of a person for initial as well as subsequent assessment.[7] GCS of the patients in study on admission to the emergency ranged from 10 to 15 in majority (57%) which indicates that the patients were conscious at the time of admission.

Table 1: Distribution of cases according to age and sex

Age group in years	Male patients (n=140) (%)	Female patients (n=103) (%)
0-10	6 (4.29)	3 (2.91)
11-20	41 (29.29)	29 (28.16)
21-30	49 (35)	46 (44.66)
31-40	26 (18.57)	17 (16.5)
41-50	8 (5.71)	6 (5.83)
51-60	7 (5)	2 (1.94)
>60	3 (2.14)	0 (0)

Table 2: Distribution of cases according to types of poisoning

Types	Patients (n=243) (%)
Organophosphorus	139 (57.1)
Dye	27 (11.1)
Snake	25 (10.2)
Rat kill	19 (8.01)
Aluminum phosphate	11 (4.8)
Kerosene/glass	15 (6.03)
Other	7 (2.8)

Table 3: Distribution of cases according to occupation

Occupation	Patients (n=243) (%)
Farmer	101 (41.5)
Housewives	76 (31.2)
Student	46 (18.8)
Self employed	9 (3.6)
Service holder	6 (2.7)
Others	5 (2.1)

Table 4: Place and manner of poisoning cases

Variables	Cases (%)
Place of poisoning	
Home	133 (54.51)
Work	66 (27.26)
Remote	44 (18.18)
Manner of poisoning	
Suicidal	223 (91.9)
Accidental	13 (5.2)
Homicidal	7 (2.9)

Table 5: Cause of poisoning and educational qualification of patients

Variables	Cases (%)
Various cause of poisoning	
Family related problem	107 (44.1)
Depression	87 (35.8)
Alcohol abuse	44 (18.2)
Other	5 (1.9)
Educational qualification	
No formal education	15 (6.4)
Primary	86 (35.3)
Secondary	104 (42.7)
Graduates	38 (15.5)

Table 6: Time interval and outcome of poisoning cases,

Variables	Cases (%)
Time presented in hospital admission	
00-12 pm	79 (32.42)
12-6 pm	66 (27.02)
6-12 pm	98 (40.54)
Time consumed before admission	
< 4 hours	114 (46.71)
4-8 hours	52 (21.73)
>8 hours	77 (31.56)
Patients hospital stay duration	
<7 days	191 (78.4)
8-14 days	45 (18.5)
>14 days	7 (3.1)
Outcome	
Recover	182 (74.72)
Complicated	27 (11.04)
Death	34 (14.24)

Maximum number of poisoning cases takes place due to Organophosphates. The second common cause of poisoning was dye poisoning. (Table-2) Oral route was the route of choice for suicidal as well as homicidal purpose.

In study it was observed that maximum poisoning were attributed to suicidal reasons (92%) with accidental (5%) being the second. (Table-4) Accidental poisoning was prevalent among children as they are vulnerable to consume toxic product in home. Homicidal poisoning was rare and account for only 3% of total.

'Home' (46.15%) was most suitable site for poisoning, followed by 'work place' (23.07%) and 'remote place' (15.39%). While for males, 'work place' was the most common place for poisoning, in females 'home' was the dominant place and it has high statistical significance (p value=0.002119). (Table-4)

Family problems were contributing factor for committing suicides. It was observed that conflict with spouse was a major cause of family problems in young age group of 20-40 years. Depression was the second leading cause. (Table-5) The major causes of depression in this region are domestic problems, financial problems, etc. Substance abuse was a major cause. Substance abuse includes alcohol. Gastric lavage was performed as first line of management in emergency. Maximum cases received help within 4-8 hours of ingestion or exposure of poisonous substance. (Table-6) This trend is due to delay in transport, time consumed in referral, remote areas of incident. (Table-6) Most of patients in the study had a shorter stay in the hospital. (Table-6) 78.4% of the patients were shifted or discharged from the ICU within 72 hours of admission due to improvement in condition. (Table-6) However there is a significance between prolonged duration of stay in the hospital and mortality (X^2 test, $p<0.05$). Among those who had prolonged stay in the ICU, a significant number were organophosphorus poisoning cases (p value <0.01). With the increase in lag period there was increase in the number of complicated and fatal cases.

DISCUSSION

Poisoning is a common medico-social problem now days all over the world. It consumes not only the valuable health service resources but also causes considerable morbidity and mortality.[8] Many factors affect the outcome including the degree to which the poison's toxicity is understood, the speed at which patient comes to clinical attention and the availability of effective medical treatment.[5] Till date there is no clear cut evidence regarding the burden of poisoning admission in hospitals of our country.

Gargi et al observed that male to female ratio was nearly 3:1, majority of the victims were in the age group of 21-30 years (45.59%), and 69.12% were married.[9] Dhanya et al stated that the male: female ration is of 1.27:1 and maximum victims were from the age group 15-30 (58.58%).[10] Ali et al also found that majority of the cases was young people from the age group 16- 40 years (about 80%).[11] The current study has come up with very similar findings i.e. maximum victims were from the age group of 20-30 years.

However, the male: female ratio is 1.3:1 and in agreement with Dhanya et al. This age range is a period in which a person is most active in all respects be it family life, professional life, or social life, which increases the stress and often leads to devastating outcomes. Dhanya et al observed that organophosphorus (OP) poisoning constitute maximum number of cases (37.25%) followed by unspecified drugs in Calicut.[10] Our results show a similarity with those conducted in tertiary care hospital at Kathmandu, which indicated that organophosphorus poisoning (19.5%) were more when compared to other types of poisoning cases.[12]

Nigam et al reported that maximum incidence of OP Poisoning is seen in persons engaged with agricultural fields (39.60 %) followed by house wives (20 %) and students (16.85 %).[13] Gupta et al confirmed through chemical analysis report that insecticide was the commonest poison (72.44%) followed by aluminum phosphide (14.28%) and acid (0.63%).[14]

Garg et al reported that aluminum phosphide is leading cause of poisoning (36.8%) followed by insecticides (31.6%) in South-West Punjab.[15] Gargi et al also reported that aluminum phosphide

(38.23%) followed by organophosphorus compounds (17.64%) were the commonest poison in Amritsar during 1997-98.[9]However, the present study was in agreement with Dhanya et al and Gupta et al and observed that organophosphorus poisoning constitute major chunk of total cases (57%) in Uttarakhand region.

It appears that OP poisoning constitutes majority of cases due easy availability. Ali et al. in a study on clinical pattern and outcome of OP poisoning showed that suicide is the most common modes of poisoning and reported in 65% cases, followed by accidental (27%) and homicidal (8%).[11]

The current study has also come with a similar pattern in overall poisoning cases. Dhanya et al. mentioned that general measures like Gastric lavage (83%) and Ryles Tube Aspiration (80%) were mainly used for management of poisoning cases.[10] The current study has come up with very similar findings.

CONCLUSIONS

The present study indicates that younger age (less than 30 years), male sex, intra familial conflicts are the significant risk factors. Education and occupation also affects cases of poisoning. Awareness and education about the potential toxicity of commonly used pesticides and drugs may help in reducing the burden of poisoning. Patterns and causal agents of poisoning vary from region to region and with time in the same region. Regularly updating epidemiology data to detect trends for specific agents and to identify risk factors is necessary to enable public health practitioners to construct preventive strategies and assist clinicians in treating patients. Our study has provided an example of how such data can be collected. Public education and timely psychosocial management of the vulnerable cases through a community based mental health program may help to reduce morbidity and mortality.

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