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Prospective Analysis of Poisoning Cases in a Super Specialty Hospital in India

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ABSTRACT

Poisoning by various substances is very common. The present study aimed to evaluate the pattern of poisoning admitted to the Intensive Care Unit at SRM Medical College Hospital and Research Center. Cases were studied for a period of one year prospectively to record the incidence, age, sex, domicile distribution, education, occupation, marital and socioeconomic status. Type of poisoning with various reasons and nature of poisoning were noted. Ethical clearance was obtained and data were analyzed using descriptive statistics. The total number of poisoning cases was 224. The various types of poisons found were alcohol, antifungal drugs, antipsychotic drugs, rodenticide, organophosphates, ant killer, endosulphan, food, hair dye, kerosene, multi tablets, nail polish, oleander seeds, petrol, pain killer, Savlon liquid, scorpion bite, thinner, benzodiazepine. Maximum numbers of poisoning were of suicidal cases. Majority of poisoning cases admitted were due to organophosphates followed by oleander seeds. The study concludes that poisoning is a communal cause of hospital admissions. The most poisoning cases were observed with pesticides handled by the farmers in the agriculture fields. Strict policies against the sale and availability of pesticides must be brought in the future and poison control center, patient counseling may have a better fruitful effect in controlling the number of poisoning cases.

Key words: Poisons, organophosphates, pesticides, poison control center

INTRODUCTION

The term poison was derived from the Latin word potionem i.e., a deadly draught. Generally, a person may be defined as a substance which injury health or destroys life, when introduced into the system or applied externally (London and Bailie, 2001; Isbister *et al*., 2008). Paracelsus, the Herald of modern toxicology, supposed that everything is poison and there is nothing without poison. Only the dose makes a pivotal role and not a material. Any substance ingested in large quantities can be toxic (Buckley *et al*., 2004; Maskey *et al*., 2012). Three main factors which reflect the causes, pattern and outcome of poisoning in a particular community are availability of a particular poison, pattern of stress and the standard of intensive care unit (Fedakar and Turkmen, 2008; Isbister *et al*., 2008).

Lifestyle and social behaviors of the people are getting changes day by day and thereby intentional poisoning is increasing across the world (Budhathoki *et al*., 2009). Distress is the main

reason for most of the poisoning. The various factors for distress are chronic disease states, business loss, love failure or differences with the intimate partner, examination or emotional disturbances etc. (Glatstein *et al*., 2010; Sarava *et al*., 2007).

According to world health organization (WHO), approximately 0.3 million people die annually due to various types of poisoning (Rao *et al*., 2005; Sharma *et al*., 2007). Though the exact figure for the global incidence of poison is unknown, it may be gambled that upto half a million people die each year as a result of various kinds of poisoning (Roberts *et al*., 2010).

Studies have reported that number of poisoning cases with organophosphate was 3 million per year and the number of deaths was 3 lacks per year through out the world (Bhattarai *et al*., 2006; Paudyal, 2008).

It is essential to self analysis the rate of poison cases admitted in a hospital. In this study, the various poisoning cases admitted in the emergency department was analyzed.

MATERIALS AND METHODS

The study was carried out at the department of Intensive Care Unit (ICU), SRM Medical college hospital and research center, Kattankulathur, Chennai for a period of one year. The SRM Medical college hospital is a 1500 bedded tertiary care, multi-specialty teaching hospital catering to the health requirements of urban and rural population. The hospital is situated in South India and surrounded by 112 villages. The study was approved by the institutional review board of the SRM Medical College Hospital and Research Center. Ethics clearance number: 199/IEC/2011. This was a prospective observational study. The study was conducted in various steps. Step 1: Identifying the type of poisoning; Step 2: Design of the study; Step 3: Defining inclusion and exclusion criteria, standards and design of data entry format; Step 4: Literature review; Step 5: Data collection; Step 6: Data collection and interpretation. The data collection form was prepared and the data sheet had the details of patient's demographic like name, age and sex of the patient, Inpatient number, date of admission, address of the patient, occupation, reason for poisoning and type of poisoning. The obtained data were subjected to descriptive statistical analysis.

RESULTS

A total of 224 poisoning cases was identified during the study period. The demographic details of the collected cases were shown in Table 1. Based on age group, 5-20 years was 43 (19.19%), 21-35 years was 141 (62.94%), 36-50 years was 31 (13.83%) and greater than 50 years was 9 (4.01%) cases. The majority of cases fall in the age group of 21-35 years. Male population is more 52.67% when compared to females 47.32%. Rural people were more 145 (64.73%) when compared with urban 79 (35.26%).

The economic status of collected cases showed that low socioeconomic status was observed in 119 (53.12%), remaining 83 (37.05%) had moderate, 22 (9.82%) had a high socioeconomic status. Low economic group is more vulnerable for poisoning which may be due to they are under continuous financial stress or other stress (e.g.: unable to meet the basic demand) during their life.

The literacy status of the cases showed 149 (66.51%) was literate, out of which 17 (7.58%) had primary education, 98 (43.75%) secondary education, 34 (15.17%) with higher education and illiterates were 75 (33.48%). The marital status of the cases showed that married person was 62.5% and unmarried was 37.5%, respectively. Married persons are more exposed to poisoning when compared to others; this may be because of more stressful situation exposure and weak minds. The occupation details of victims showed farmers were 41.96% followed by housewife 25.0%, labor

Table 1: Patient's demographic details

Demographic details	No. of patients	Percentage (%)
Age in years		
5-20	43	19.19
21-35	141	62.94
36-50	31	13.83
>50	9	4.01
Gender		
Male	118	52.67
Female	106	47.32
Domicile		
Rural	145	64.73
Urban	79	35.26
Socio-economic status		
Low	119	53.12
Moderate	83	37.05
High	22	9.82
Marital status		
Married	140	62.50
Unmarried	84	37.50
Education		
Primary	17	7.58
Secondary	98	43.75
Higher	34	15.17
Illiterate	75	33.48
Occupation		
Farmer	94	41.96
Business	13	5.80
Labor	56	25.00
Housewife	8	3.57
Student	42	18.75
Others	11	4.91
Total	224	100.00

Table 2: Details on distribution of cause of poisoning

Cause of poisoning	No. of patients	Percentage (%)
Accidental	58	25.89
Suicidal	166	74.10
Total	224	100.00

18.75%, student 5.8%, business 3.57% and others 4.91%. Farmers have more chances for poison consumption since they handle poisons for agriculture purposes and they may be drawn into a state of poison consumption in case of crop failure. Easy availability of agrochemicals and exposed to the hazards may also contribute to this end.

Out of 224 cases, 58 (25.89%) cases were accidental and 166 (74.10%) cases were observed as suicidal poisoning (Table 2) and the various reasons for suicidal poisoning were family problems i.e., 96 (42.85%), 44 (19.64%) were due to the reason that patients felt uncared by (among) family members, 36 (16.07%) were due to teenage life events, 15 (6.69%) were due to depression, 12 (5.35%) were due to stress, 9 (4.01%) were due to increasing age, 6 (2.67%) were due to health problem and remaining 4 (1.78%) and 2 (0.89) cases were due to financial and business crisis (Table 3).

Table 3: Details on various reasons for the poisoning and the number of victims belonging to each reason

Reason for poisoning	No. of patients	Percentage (%)
Family problems	96	42.85
Uncared	44	19.64
Teenage life events	36	16.07
Depression	15	6.69
Stress	12	5.35
Increasing age	9	4.01
Health problems	6	2.67
Financial crisis	4	1.78
Business crisis	2	0.89
Total	224	100.00

Table 4: Details on various types of poisoning substances consumed by the patients

Substance consumed	No. of patients	Percentage (%)
Alcohol (Methanol)	10	4.46
Antifungal drugs	1	0.38
Antipsychotic drugs	5	2.23
Rodenticide	11	4.49
Organophosphates	37	16.51
Ant killer	4	1.78
Endosulphan	3	1.33
Food	5	2.23
Hair dye	3	1.33
Kerosene	6	2.67
Multi-tablets	12	5.35
Nail polish	23	10.26
Oleander seeds	37	16.51
Petrol	8	3.57
Pain killer	3	1.33
Savlon liquid	4	1.78
Scorpion bite	2	0.89
Snake bite	27	12.05
Thinner	4	1.78
Benzodiazepine	9	4.01
Miscellaneous	10	4.46
Total	224	100.00

The type of poisoning and number of victims belonging to each category was shown in Table 4. The exposure substances identified as most commonly encountered in the emergency department included alcohol 4.46% (n = 10), antifungal drugs 0.38% (n = 1), antipsychotic drugs 2.23% (n = 5), rodenticide 4.49% (n = 11), organophosphates 16.51% (n = 37), ant killer 1.78% (n = 4), endosulphan 1.33% (n = 3), food 2.23% (n = 5), hair dye 1.33% (n = 3), kerosene 2.67% (n = 6), multi tablets 5.35% (n = 12), nail polish 10.26% (n = 23), oleander seeds 16.51% (n = 37), petrol 3.57% (n = 8), pain killer 1.33% (n = 3), savlon liquid 1.78% (n = 4), scorpion bite 0.89% (n = 2), thinner 1.78% (n = 4), benzodiazepine 4.01% (n = 9) and miscellaneous 4.46%T (n = 10).

DISCUSSION

The occurrence of 224 cases of poisoning in a single hospital over a period of eight months emphasizes the seriousness of the problem of poisoning in this area. Consuming poison in male gender is more than the female population in this study. This opinion is in accordance with other studies who also observed a male predominance (Lall *et al*., 2003; Kanchan and Menezes, 2008; Al-Barraq and Farahat, 2011). This could be due to the reason that men were more often exposed to the strain and stress in day to day life, as well as to the occupational threats than the females. The third decade of a person's life was found to be the most attempted number of poisoning in many of the poison studies conducted in India and other countries (Ayoglu *et al*., 2009; Sam *et al*., 2009). The study revealed that the maximum number of cases was in the age group of 21-30 years, this could be due to the reasons that this age group peoples are more prone to work pressure, love failure, marriage problem, quarrel with family and other life settlement factors.

Studies conducted not only in India but also in other countries reported that organophosphorous are the most frequently encountered compound in poisoning (Rao *et al*., 2005; Bhattarai *et al*., 2006; Paudyal, 2008). This concept is in concordance with the present study report where organophosphorous compounds were found to be the primary cause of poisoning. SRM hospital caters to the need of most of surrounding village people. Nearly 112 villages are around the hospital. Since farming is the main occupation, organophosphorous compounds are easily accessible as pesticides for crops. Thus, organophosphorous poisoning is more frequent in this study. Over The Counter (OTC) drugs are also one of the most important issues to be taken into account in India. Establishment of strict policies against the sale and availability of pesticides and OTC drugs will be an effective way to control organophosphorous like poisoning and drug poisoning.

Treatment modalities for any poisoning during the study period were found to be almost similar. It may include preventing the further, increasing the elimination of the poison, administering specific substances that eliminate, inactivate or counteract the effects of the poison i.e., antidotes, if available. Providing supportive care for the patient was the mainstay of management in the majority of poisoning. The main aim of supportive care is to treat the symptoms rather than the poison itself especially when unknown (Harish *et al*., 2011). With hasty medical support, most people improve well and come back to their normal life but there is no guarantee to say that those people may not repeat their suicide attempt. This situation can be better handled only by giving counseling to victims.

Studies have shown that at the age of 21 years, many people were in the intention to kill them-self and few people committed suicide attempt (Bhoopendra and Unnikrishnan, 2006; Howlader *et al*., 2008; Abahussain and Ball, 2010; Inamdar *et al*., 2010). The same result was observed in the present study. Result portrayed that most of the poisoning cases were found to be deliberate self harming. Considering this into account, such patients should be given mental support and care which can be done only through counseling. There by deliberate self-harm can be reduced to a large extent.

Life is a gift from God and no one has right to take it except the creator. There are many who are fighting for life, carving to live in this wonderful earth one more day. The doctors often strive hard to save lives. There is no problem without a solution, this should be explained to them and help them live peacefully. Providing counselling to the poisoned patients will reduce the chances of repeated attempts and help physicians to improve the quality of treatment, minimize the cost of therapy and the period of hospitalization.

CONCLUSION

Poisoning is a common cause of hospital admissions. The most poisoning cases were observed with pesticides handled by the farmers in the agriculture fields. Establishment of strict policies against the sale and availability of pesticides and over the counter drugs are an effective way to control organophosphorous and drug poisoning. The reason for poisoning among the majority of the patient population was family problems which cannot be treated medically. Here comes the need for counseling. Apart from this, the present study also highlights the lacunae of poison information services in a tertiary care hospital. Establishing a 24 h working poison control center may help in identifying and managing the poison cases in a prompt and proper manner.

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