Unravelling the Poisoning Cases Admitted to a Tertiary Care Hospital - A Retrospective Study

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ABSTRACT

BACKGROUND

Accidental and intentional poisoning are major preventable contributors to death and illness. According to World Health Organization (WHO) estimates, 0.3 million people die every year due to various poisoning agents. Earlier the initial resuscitation, gastric decontamination, and use of specific antidotes, better the outcome. In order to improve clinical management, proper planning and prevention is. This study was conducted in a tertiary care hospital to evaluate the pattern of acute poisoning cases in that region.

METHODS

This is a retrospective study conducted among 57 patients with poisoning admitted over a 2-year period. Data was collected from ICU registry and Medical Records Department, ESIC MH.

RESULTS

Females represented 59.6 % (n = 57). Most of our patients were in the age group 18 – 28 yrs. (35.08 %). Notably majority of the cases had consumed organophosphorus compounds (25 patients, 43.85 %) and tablets (22 patients, 38.60 %). Majority (22 patients, 38.59 %) stayed at ICU for less than three days; overall mortality from all poisoning was low (2 patients, 3.50 %).

CONCLUSIONS

Use of organophosphorus compound and tablets for intentional poisoning continues to be pervasive in India. Education on poison, counselling and strict pesticide and drugs regulation laws will reduce the incidence of this public health problem.

KEYWORDS

Organophosphorus Compound, Poisoning, Mortality

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BACKGROUND

Acute poisoning is an important medical emergency and major public health concern in developing country like India. In developing countries, the incidence of poisoning has been reported between 0.07 % to 0.7 %,[1] resulting in hospitalization, health care resources utilization and mortality. WHO estimates 0.3 million people die every year due to various poisoning agents.[2] The victim of poison can be endangered to death if no proper treatment provided in time. According to the American Association of Poison Control Centers, approximately 1.5 million cases of poisoning occur in children and adolescents under the age of 20 each year in the United States. However, in India, the exact incidence cannot be defined as there is underreporting of cases of poisoning. The incidence of particular type of poisoning varies from country to country and also in different regions of same country.[3] In southern India where majority of population are farmers, organophosphorus compound poisoning is common due to easy availability. In addition to that snake bite is a common acute emergency faced by rural population. There has been an increase in poisoning cases in recent times due to changes in lifestyle, socioeconomic status, unemployment and social behaviour.[4] Early diagnosis, treatment and prevention are the measures through which this problem can be solved. The aim of this study is to identify distribution and clinical presentation of poisoning cases to the intensive care unit (ICU) and to identify the factors at admission that may predict their organ failure, organ support and mortality.

METHODS

Present retrospective study included all patients admitted to ICU with consumption of poison over a period of two years (July 2016 to June 2018). Fifty seven cases with consumption of poisoning were identified from the ICU register and files of these cases were extracted from the hospital medical record department. The following data was collected and documented in a precise proforma: demographic details, date and time of consumption of poison and admission. Type (accidental or suicidal), route and compound used for poisoning. History was collected regarding any previous drug intake or indirect clues like empty drug bottles or tablet strips were asked for. General physical examination and systemic examination was carried out in emergency room and vitals was recorded. The need for mechanical ventilation and organ support and organ failure, outcome parameters like duration of mechanical ventilation and ICU stay. All victims were studied till death or discharge from ICU.

Inclusion Criteria

Organophosphorus poisoning, aluminium phosphate toxicity, snake bite, drugs and acid consumption. Both accidental and intentional poisoning were included.

Exclusion Criteria

Patients with co morbidities, hypertension, cardiac disorder, diabetes mellitus and cancer patients were excluded.

Statistical Analysis

SPSS version 23.0 (IBM Corp) was used to perform statistical analysis. Mean ± standard deviation (mean ± SD) was used to express numerical data, whereas categorical variables were presented as number and percentage (%). Student t test compared the numerical data across the groups and ANOVA test performed comparison of more than 2 groups. Chi square test was used to compare categorical variables. P value < 0.05 was considered statistically significant.

RESULTS

During the study period, fifty seven adult patients were admitted to ICU with h/o consumption of poisons. From emergency department all these cases were shifted to intensive care unit after initial stabilization. Gastric lavage was done for those patients who came within 2 hrs. of consumption except for acid consumption cases. Age, gender, accidental or suicidal poisoning, previous suicide attempts and duration between consumption and emergency care was recorded for all patients. Standard care was given, if hypotensive intravenous fluids were administered according to CVP. Oxygen was given with monitoring of pulse oximetry and arterial blood gases. Mechanical ventilation for respiratory failure cases was used. In cases of severe metabolic acidosis alkalinisation was done using sodium bicarbonate. The duration of stay in ICU, total hospital stay and mortality was recorded. We also recorded the length of stay in ICU and mortality rate. Of these 57.9 % (33 patients) were female and 42.1 % (24 patients) were male. Peak occurrences of the cases were seen in age group of 18 to 28 years 35.08 % (20 patients). Majority patient had consumed the poison with a suicidal intent. In 57 poisonings 84.22 % (48 patients) of cases were the result of suicide attempt, while 15.78 % (9 patients) of poisonings were the result of accidental consumption (Table / Figure 1). Oral route was the most common one 98.25 %, inhalation route in 1.75 %. Organophosphorus (OP) compounds were the most common poison (25 patients, 43.85 %) consumed. Followed by tablet consumption (22 patients, 38.56) and 10.52 % cases consumed rodenticide agents (Table / Figure 2). The mean delay between consumption of poison and admission to the hospital was 4.075 + 3.850 hours. Majority of patients (22 patients, 38.59 %) stayed at ICU less than three days (Table / Figure 3). Out of 57 patient 18 had required mechanical ventilation for an average of 4.45 days. More than 35 % (20 patients) had two or more system involvement. Overall ICU mortality from poisoning was 3.50 % (2 patients). On subgroup analysis of the patients who had consumed organophosphorus compound (25 patients), more patients were found to have required mechanical ventilation (14 patients, 56 %), mortality rate remained 8 %

(2 patients). The patient with aluminium phosphide poisoning had much higher mortality rate 50 %.

Age	Gender		Accidental	Suicidal	Total
	Male	Female			
18 - 28	8	12	3	17	20
29 - 38	6	8	2	12	14
39 - 48	5	9	2	12	14
49 - 58	3	3	1	5	6
> 58	2	1	1	2	3
Total	**24**	**33**	**9**	**48**	**N = 57**

Table 1. Gender and Age Group Wise Distribution of Cases

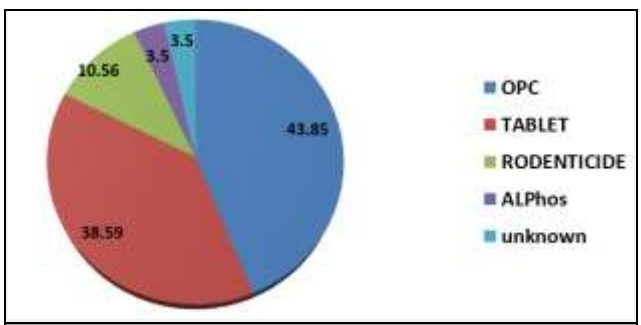

Figure 1. Agents of Poisoning (OPC, Organophosphorus Compound, ALPhos, Aluminium Phosphide)

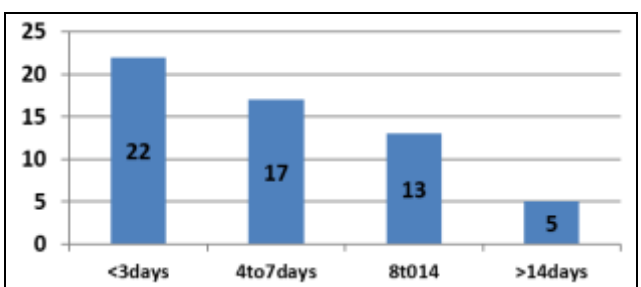

Figure 2. Duration of Total ICU Days

DISCUSSION

Poisoning causes a huge financial burden for developing country like India. It contributes to majority of admissions for emergency department. The incidence vary from country to country and also in different regions within a country.[5,6] Majority of poisoning cases occurred in younger age group in our study which is also true in other domestic and foreign studies.[7,8] Intention of self-harm contributed to majority of poisoning cases in our study (84.21 %), which is comparable to other studies where range of suicide attempts for poisoning was between 46 and 97.2 %.[8,9,10] The differences in the rate of suicide attempts may be attributed to many factors including socioeconomic level, increasing work stress, serious health problems, depression, disappointment in love affairs and increasingly oppressive attitude towards women. Organophosphorus poisoning is the most common forms of poisonings via oral route. Oral route of poisoning contributed to majority of cases in our study (98.24 %).[10,11] Poisoning rate of 43.85 % was seen with use of OP (organophosphorous) compounds. The factors contributing to it are widespread availability and easy access, lack of knowledge about storage and use, regulation laxity concerning the sales of such substances and agrochemicals are easily available in our country. In our study tablet consumption is the second most common forms of poisoning (38.59 %). This may be due to over the counter availability of medications without prescription in the pharmacies of our country. Strict regulations in drug dispensing may reduce such incidence. The present study revealed that self-poisoning (suicidal 84 %) is the most common manner of acute poisoning, followed by accidental consumption (accidental 10 %). Results of a 10 yr. study in Chandigarh revealed that intention was suicide in 72 %, followed by accidental (25 %). A recent trend of increasing in number of cases of poisoning are due to multiple socio economic causes like rapid urbanization, decreased job opportunities, divorce in family and economic instability, especially in age group 21 - 30 years, could be due to lack of employment, break up in family support system, failure of love affairs, an individual's frustrations, inadequacy to cope with some immediate situation, impulsive behaviours, stress due to job and family, etc. Following poisoning patient reported after a significant delay to health care facility. Early clinical attention, efficacy of the treatment and toxicity are all contributory factors to the clinical outcome. A study reported that time was a significant factor in determining mortality and outcome of poison victim.[12] Our patient presented after a mean delay of approximately four hours.

Majority patient (22 patients, 38.59 %) stayed at ICU less than three days. 31.57 % (18 patients) had required mechanical ventilation for an average of 4.45 days. More than 35 % (20 patients) had two or more system involvement. Overall ICU mortality from poisoning was 3.50 % (2 patients). On subgroup analysis of the patients who had consumed organophosphorus compound (25 patients), more patients were found to have required mechanical ventilation (14 patients, 56 %) and mortality rate remained 8 % (2 patients). The patient with aluminium phosphide poisoning had much higher mortality rate 50 %. In India where 70 % of the population depend on agriculture there is relative ease of availability of insecticide and pesticide. This is responsible for maximum cases of organophosphorus poisoning in our country. Even government apathy towards regulation of pesticides sales also contributes to increase in poisoning cases. Now-a-days aluminium phosphide is most commonly used for storing wheat grain and is easily available. In our study only 2 patients died, mortality rate of 3.5 %. One case was aluminium phosphide poisoning and other acid consumption which has a high mortality even with treatment. Majority of our cases were discharged 96.5 %. Our observation was similar to other studies who have reported a poisoning related mortality rate of 0 % - 2.8 %.

Our study highlights the pattern of poison among adult patients admitting to tertiary hospital. Data such as this will help improving the knowledge on poisoning and helps to formulate preventive and management strategies. Major limitation in our study, firstly it's an observational retrospective study. Secondly the patient presented to our hospital were only ESI card holders. Hence our data may not be truly reflective of the pattern of poisoning at the community level.

The drawbacks of our study was it was a retrospective study, involved population of a particular socio economic strata (ESI card holders) and sample size was small for

generalization. Some additional information were missing like miscellaneous poisoning, type of snake bite and time lapse for patients referred from other hospitals. However from our study valuable information regarding epidemiology, demographic distribution and outcome of acute poisoning cases at a tertiary care hospital was obtained. The mortality in our study was mainly due to insecticides and corrosive poisoning with suicidal intent. Early recognition, transport and appropriate emergency care will prevent morbidity and mortality in acute poisoning cases. Government.

CONCLUSIONS

Organophosphorus compound poisoning constituted the majority of cases in our study with most cases from younger age group and with intention of self-harm. Present study enhances the knowledge of poisoning, and reflects the need for stringent rules regarding availability and sale of these substances. Proper counselling and information on poisoning will minimize the next attempt. Effective management will improve outcome and minimizes the mortality.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
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