



INTENSIVE CARE MANAGEMENT OF POISONING

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Article Info

Received 25/04/2014

Revised 15/05/2014

Accepted 18/05/2014

Key words: Toxicity, poison, Drug overdose, Antidotes, Organophosphorus, Insecticides, Pesticides.

ABSTRACT

Poison is a substance capable of producing damage or dysfunction in the body by its chemical activity. Poisoning can be accidental or intentional. In many parts of the developing countries pesticide poisoning, insecticidal poisoning, drug over dose, and cosmetics poisoning, causes more deaths than infectious diseases. To study the pattern of poisoning cases admitted in Medical Intensive Care Unit of selected Hospital, to list the type of poisons consumed, observe the symptoms, antidotes used in these cases and to prepare guidelines for the management of the same. The study was conducted for a period of 9 months. The ethical committee clearance was obtained from Institutional Review Board of Hospital. Data of all patients admitted to MICU for the treatment of poisoning was collected from their case sheets. The data was analyzed for demographic profile of patients, patterns of specific drug and antidote use. During the period of study, 55 patients were enrolled. Guidelines for the management of poisons that we came across in our study were made for the reference of the clinicians. In conclusion it can be said that identification of pattern of poisoning cases and antidotes used helps in making guidelines for the management of the same.

INTRODUCTION

Poisoning, either accidental or intentional is a common cause of attendance at accident and emergency departments. Every individual is exposed to toxic chemicals usually in minute, sub toxic doses through environmental and food contamination [1-3]. In some instances people may be subjected to massive or even fatal exposure through a chemical disaster or in a single accidental or intentional poisoning. Between these two extremes there exists a wide range of intensity of exposure which may result in various acute and chronic toxic effects. Such effect clearly lies in the public health domain particularly in cases of chemical contamination of the environment that may result in exposure of an unsuspecting public [4]. The situation is similar to but subtler than exposure to infectious diseases. Although chemicals may be absorbed in small quantities they do not induce pathological signs until toxic concentrations are reached in the tissues of exposed individuals [5].

The massive expansion in the availability and use of chemicals including pharmaceuticals during the past

few decades has led to increasing awareness on the part not only of the medical profession but also of the public and various authorities of the risks to human health posed by exposure to those chemicals. Moreover, each country has a variety of natural toxins to which its population may be exposed [6].

Tens of thousands of man-made chemicals are currently in common use throughout the world and between one and two thousand new chemicals appear on the market each year [7]. In industrialized countries there may be at least one million commercial products that are mixtures of chemicals and the formulation of up to one-third of these may change every year. A similar situation exists in the rapidly industrializing developing countries. Even in the least developed regions there is growing use of agrochemicals such as pesticides and fertilizers of basic industrial chemicals particularly in small scale rural cottage industries and of household and other commercial products as well as pharmaceuticals [8].

The principal toxic risks that exist in any country may be readily identified by surveys of hospitals accident,



emergency wards, forensic departments, and rural hospitals in agricultural areas of hospitals [9].

Present study was taken up with the aim to study demographic profile of the poisoned patients and to evaluate the poisoning cases in patient population, the legality of the suicide attempt and the outcome. It also aimed to discuss the possible preventive ways based on modifiable factors associated with lethality.

MATERIALS AND METHODS

Data was collected from the medical records of the poison patients admitted to selected Hospitals in District Kangra H.P. India

Inclusion criteria

- All In-patients admitted with complain of poisoning in In-patient department and are willing to participate in the study.

Exclusion criteria

- Poisoning due to long term ingestion of a drug.

Method of collection of data

Data of all poisoned patient who have been in treatment of poisoning will be collected

The data was analyzed

- To study the patterns of specific drug and antidote use among patient categories defined by age, diagnosis.
- To study the relationship between the prescribed medicine and the apparent indication.
- To identify the condition most frequently treated.

RESULTS

The study of review of poison cases which are reported in both the hospital. 47 queries were received from the selected hospital which includes.

Type of Poisoning	Number of Query/Cases
Organophosphorus poisoning	19
Animal poisoning (Snakebite)	5
Food Poisoning	7
Cosmetic Nail Polish, Perfumes, and cologne	3
Drug Poisoning (Opioid, Quinophosphate, Phenyntion)	4
Insecticidal Rat poison, Naphthalene balls, Scabicidal lotion	3
Drug Overdose	2
Alcohol poisoning	2
Lead Poisoning	2

During the study period of 9 months number of individuals who got admitted to Medical Intensive Care Unit due to poisoning were 55 patients. The age of patients ranged from 12 to 84 years. Majority of the patient's age ranged from 12-60 years followed by geriatric [above 60 years] and there was just one case [1.8%] in pediatrics. The

maximum numbers of cases [41.81 %] were in the age group between 19-30 years as this age group is more prone to stress and challenges in life. Among 55 patients who got admitted due to poisoning, 29(52.7%) were male and 26(47.3%) were female. Majority of the cases i.e. 97% were from the urban area and 3% were from the rural area. This represents the increased stress of rapid urbanization. The number of patients with primary education and more constituted 80% where as 20% of the patients were illiterate. The nature of work of the individuals who consumed poison varied from a simple laborer [1.8 %] to businessmen [49 %], students [29.8%] and housewives [18.28 %]. Unemployed youth constituted 1.8 %. Businessman topped the list followed by students and housewives which correlates well with the reasons submitted by the patients for consuming poison. 68% of the people were married, 29% were single followed by 3.6% widows. The number of patients who were alcoholic was 29 [52.72%], out of which 27(93.1%) were male and 2(6.89%) were female. Smokers were 19 [34.54%] patients, out of whom 17(89.47%) were male and 2(10.52%) were female. 7 [12.74%] patients were neither smokers nor alcoholic, out of which 2(28.57%) were male and 5(71.42%) were female. Intentional poisoning was more with alcoholic male patients. Although majority of cases [73%] were first time poisoning ,19% of the cases was found to be second time and for 5.5%, it was third time which might indicate an underlying psychiatric illness in those patients with suicidal tendencies. Number of admissions month wise indicates many admissions due to poisoning in December followed by January, October & November. However, significance of this in our study is unclear. About 55 % cases were admitted in the night and 45 % during the day. Out of 55 cases, 53 [96.4 %] were intentional poisoning and 2 [3.6%] were accidental poisoning. This finding is similar to the report by S.K. gupta et al [10]. In 54 cases the poison was consumed orally and one case taken intravenously. The poisons consumed were Organophosphorus compounds {Pesticide and Insecticide} 60%, overdose of drugs 34.5 % and cosmetics 1.8 %. Unidentified poison amounted to 3.60 %. Among OP compounds, Insecticides constituted 76.4%. The reasons for intentional poisoning were found to be financial [52.7 %] followed by emotional disturbance [29 %], and family problems [18.2%]. The amount of poison consumed was known in 75% of cases whereas in 27% it was not known as patients were unconscious and not in a position to tell. The high incidence of poisoning due to pesticides and Insecticide is [60%], [34.5%] cases were due to overdose of drugs consumed namely Diazepam, Acetaminophen, Diclofenac, Aspirin, and Dicycloverine HCL. Out of these drugs CNS Depressants were 48% followed by Analgesic and Antipyretics 31.5 % and Antispasmodics drugs 10.52 %. Out of 55 cases, neuromuscular symptoms involving CNS such as headache, dizziness, confusion, depression, irritability were seen in 52.2 %, GI symptoms such as nausea,



vomiting, stomach cramps and stomach ache was seen in 61.81 %, CVS symptoms such as hypertension and hypotension were seen in 71 % of cases, respiratory symptoms such as breathlessness amounted to 78.18 % and 7.27 % patients presented with no symptoms, however there was considerable overlap of symptoms in patients. The specific antidotes were used in 81.82% % of the cases. The specific antidotes that were used most frequently are Atropine [47.27 %], followed by PAM [29.09 %], N-Acetyl cystine [5.45 %]. General antidote such as charcoal was used in [18.18%] of the cases. The concurrent medication prescribed were analgesics [83.63%] followed by antibiotics [63.63%]. The entire patient was given supportive management such as antacids and antiulcer medication, IV fluids, and oxygen therapy. In case of OP poisons, strength of the antidote administered was adjusted on the basis of clinical condition of the patients. Whereas in drug poisoning drug specific antidote was given [e.g. Flumazenil was administered in case of benzodiazepine poisoning, N-acetyl cystine was administered in acetaminophen poisoning etc. In case of low dose drug poisoning e.g. Aspirin, it did not require alkali treatment and was managed by the supportive therapy. Out of 55 cases, 54 patients were recovered and one patient expired because he was not able to reach on time for treatment. The duration of stay in the hospital varied from three to thirty days depending on the type of poison. In case of Organophosphorus poisoning, hospitalization days ranged from 7 to 20 days with a mean of 10-15 days. Those who develop respiratory failure were put on ventilators. The mean stay was 15 days. Most of the patients showed increase in blood count [23.6%] followed by decrease in Pseudocholinesterase [21.8%] in the cases of OP poisoning, whereas 40% of the patients showed the normal laboratory reports. Toxicology screen showed increase in blood count positive for benzodiazepine in case of benzodiazepine overdose. All cases were admitted to MICU for observation and after recovery were discharged after psychiatric counseling. Guidelines were prepared for the management of poisons that were consumed in our present study for the quick reference of the physicians [11].

CONCLUSION

Majority of cases of poisoning were associated with severe symptoms and higher lethality. Intervention

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facilities decreasing the period between the ingestion of poison and initiation of treatment might prevent many deaths [12]. Measures like restricting availability and banning more toxic compounds may help. For effective management of an acutely poisoned victim five complementary steps are required.

1. Resuscitation and initial stabilization.
2. Diagnosis of type of poison.
3. Nonspecific therapy.
4. Specific therapy.
5. Supportive care.

And there is a need for poisoning information center in the various hospitals in collaboration with drug information center.¹³

Particular emphasis is given to the key role to be played by poison information centers.

- Information services
- Clinical services
- Toxicovigilance and prevention of poisoning.
- Standardized formats for the collection and storage of essential data by poison information centers.
- Documentary and library support for poison information centers.

Intentional poisoning is a major problem in urban setting leading to hospitalization and even death of individuals.¹⁴

- Maximum incidence of poisoning was seen in patients from urban region in the age group of 19-30 yrs.
- Majority of the patients were literates with businessmen, followed by students and housewives.
- Most of the patients were alcoholics.
- Majority of the cases were due to intentional poisoning by oral route.
- OP compounds are the most common cause of poisoning (60 %) of cases with longest duration of stay of 10-15 days or more.
- Atropine was the antidote used in most of the cases (47.27%) followed by PAM (29.10 %)
- Although most of the patients were recovered, there was one death. Having information about the commonly consumed poisons and guidelines for the management of the same would be helpful to the clinicians as a quick reference before treating the patients.



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