



STUDY OF INCIDENCE, PATTERN AND OUTCOME OF ACUTE POISONING CASES IN A TERTIARY CARE HOSPITAL IN KOLKATA.

Dr. Bodhisatwa Biswas

Assistant Professor, Dept. of General Medicine, ICARE Institute of Medical Sciences and Research & Dr. Bidhan Chandra Roy Hospital, Haldia

Dr. Swarup Pal

Associate Professor, ICARE Institute of Medical Sciences and Research and Dr. Bidhan Chandra Roy Hospital, Haldia.

Dr. Abhradip Das

Consultant & Head of Dept. of Pulmonary Medicine, NH Narayana Multi-Speciality Hospital, Barasat.

ABSTRACT

Introduction: Acute poisoning is a medical emergency. It is important to know the nature, severity and outcome of acute poisoning cases in order to take up appropriate planning, prevention and management techniques to save innumerable lives. Management of critically ill patients of acute poisoning will greatly improve if the common causes of poisoning are properly defined. **Aim and Objective of the study:** to assess the incidence, pattern and outcome in acute poisoning cases during hospital stay in a tertiary care hospital, R. G. Kar Medical College and Hospital. **Materials and Methods:** A detailed history had been taken from the patient or patient's family. Data regarding age, sex, time elapsed after intake, circumstances of poisoning, name of poisonous substance, chemical type, duration of hospitalization, severity and outcome are collected. Data is collected for general physical examination and systemic examination of the patients. Data were collected from patient's case sheets and transferred to data entry format for evaluation. **Discussion and conclusion:** It is important to know the nature and severity of poisoning in order to take appropriate preventive measures. Studies of this nature will be a useful tool in planning and management of critically ill acute poisoning cases. The initial approach to the poisoned patient should focus on six major areas: (1) resuscitation and stabilization; (2) history and physical examination, including evaluation for a specific toxidrome; (3) appropriate decontamination of the gastrointestinal tract, skin, and eyes; (4) judicious use of laboratory tests, electrocardiograms, and radiographic studies; (5) administration of specific antidotes, if indicated; and (6) utilization of enhanced elimination techniques for selected toxins. By taking proper measures mortality of acute poisoning cases can be decreased.

KEYWORDS : acute poisoning, outcomes, chemical type, duration of hospitalization, severity and preventable measures.

INTRODUCTION

Acute poisoning is a medical emergency. It is important to know the nature, severity and outcome of acute poisoning cases in order to take up appropriate planning, prevention and management techniques to save innumerable lives. Management of critically ill patients of acute poisoning will greatly improve if the common causes of poisoning are properly defined [1].

Aim And objectives of The Study:

To assess the incidence, pattern and outcome in acute poisoning cases during hospital stay in a tertiary care hospital, R. G. Kar Medical College and Hospital.

MATERIALS AND METHODS

A prospective observational study is conducted on patients of various acute poisoning due to drugs and chemicals in people above the age of 12 years. Cases of snake bite, food poisoning and allergic reactions to drugs were not included in the study. Patients were assessed at the time of admission. A detailed history had been taken from the patient or patient's family. Data regarding age, sex, time elapsed after intake, circumstances of poisoning, name of poisonous substance, chemical type, duration of hospitalization, severity and outcome are collected. Data is collected for general physical examination and systemic examination of the patients.

Study Setting:

Identify the type of poisoning inclusion in the study - cases of different poisonings being admitted for the treatment of poison with various co-morbid conditions are selected.

Study Population:

Defining criteria, standards and design of data entry format

1. Inclusion criteria:

In patients having OP poisoning, agricultural pesticides, industrial toxins, toxic plants, drugs, acid, and any comorbid

conditions were included in the study.

2. Exclusion criteria: In patients having snake bite, stings bite, food poisoning and allergic reactions to drugs are excluded from the study.

Sample Size:

All the patients of acute poisoning with various co-morbid conditions admitted in Medicine indoor of R. G. Kar Medical College and Hospital during the period of data collection.

Design of the Study: Observational descriptive study

Study Period: The study was carried out for a period of one year from December 2021 to November 2022.

Sample Design: No sampling technique will be applied as all the patients of acute poisoning with various comorbid condition will be included in my study.

Control – Not required

Methods of Data Collection:

A detailed history had been taken from the patient or patient's family. Data regarding age, sex, time elapsed after intake, circumstances of poisoning, name of poisonous substance, chemical type, duration of hospitalization, severity and outcome are collected. Data is collected for general physical examination and systemic examination of the patients. Data were collected from patient's case sheets and transferred to data entry format for evaluation.

Study Procedure:

- Informed consent form will be filled up and duly signed by patients/ persons accompanying the patients before enrolling them in this study.

- Detailed history will be taken from the victims or relatives of the patients of acute poisoning with various co-morbid condition
- Full clinical examination will be done and will be recorded in pre-designed proforma (enclosed).
- To note the duration of hospital, stay and outcome of the patients in relation to
- Nature of poison consumed
- Amount of poison consumed
- Duration between ingestion and initiation of treatment
- Therapy received before hospitalization
- All the patients should be treated as per standard protocol.

Data analysis and interpretation:

The collected data were analyzed for their appropriateness and suitability. The interpretation was made for the collected data

RESULTS:

We included a total of 80 subjects based on inclusion and exclusion criteria in the age group more than 5 years and less than 50 years, who presented with CSOM.

Table 1: Shows age-wise distribution of study subjects

VARIABLES	Number =518	Percentage
AGE GROUP		
13-20 yrs.	120	23.17
21-30 yrs.	302	58.30
31-40 yrs.	78	15.06
>40 yrs.	18	3.47
Total	518	100

Majority of the cases were in the age group of 21-30 years, followed by age group 13-20 years.

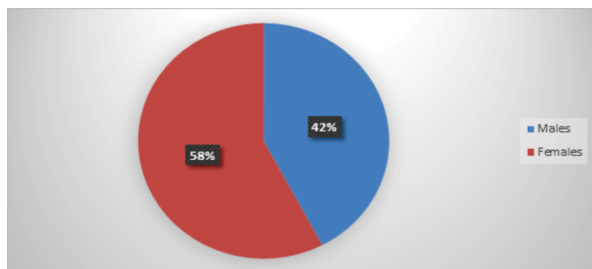


Figure 1: Shows gender-wise distribution of study subjects
In our study, 42% were males and 58% were females.

Table 2: Distribution of study population by type of poisoning

Poisons	Number of Cases=518	Percentage
Aconite	1	0.19
Cockroach killer	4	0.77
CuSO4	12	2.32
Cypermethrin	13	2.51
Dhatura	2	0.39
HNO3	1	0.19
Kerosine	28	5.41
Lice killer	24	4.63
Mosquito repellent	24	4.63
Muriatic acid	80	15.44
OP	112	21.62
Oxalic acid	1	0.19
Paraquat	32	6.18
Phenyl	52	10.04
Rat killer	32	6.18
Tab Alprazolam	72	13.9
Tab Amitriptyline	8	1.54
Tab Lorazepam	7	1.35
Tab Nitrazepam	11	2.12
Yellow oleander	2	0.39

It is evident from the table 2 that the most common poisoning was OP poisoning followed by muriatic acid.

Table 3: Distribution of study population based on clinical features

Clinical presentation	No = 518	Percentage
CNS	248	48
CVS	201	39
RS	67	13
GIT	333	64

Table 4: Shows hospital outcome in study population according to duration between ingestion of poison and initiation of treatment

Clinical presentation	No = 518	Percentage
CNS	248	48
CVS	201	39
RS	67	13
GIT	333	64

There was significant difference in outcome in terms of average duration between poisoning and initiation of treatment in hospital (p value 0.00) and there were significant differences in outcomes in different poisonings (data not shown).

DISCUSSION

Poisoning is a major problem all over the world, although its type and the associated morbidity and mortality vary from country to country depending on the socioeconomic factors and cultural diversity. According to the legal system of our country, all poisoning death cases are recorded as unnatural death and a medico-legal autopsy is routine.

The term poison first appeared in the English literature around the year 1230 A.D. to describe a potion or draught that was prepared with deadly ingredients. [2][3] [4] [5].

Animal poisons usually referred to the venom from poisonous animals. Although the venom from poisonous snakes has always been among the most commonly feared poisons, poisons from toads, salamanders, jellyfish, stingrays, and sea hares are also of concern. Nicander of Colophon, a Greek poet and physician who is considered to be one of the earliest toxicologists, experimented with animal poisons on condemned criminals. [6]

Poisonous plants used in India at this time included *Cannabis indica* (marijuana), *Croton tiglium* (croton oil), and *Strychnos nux vomica* (poison nut, strychnine). [7] [8]

The mineral poisons of antiquity consisted of the metals antimony, arsenic, lead, and mercury. Undoubtedly the most famous of these was lead. Lead was discovered as early as 3500 B.C. [9][10] In addition to its considerable use in plumbing, lead was also used in the production of food and drink containers. [11] It was common practice to add lead directly to wine, or to intentionally prepare the wine in a lead kettle to improve its taste. Not surprisingly, chronic lead poisoning became widespread. Nicander described the first case of lead poisoning in the 2nd century B.C. [12]

Pesticides are substances or mixtures of substances intended to prevent, destroy, repel, or mitigate any pest and any substances or mixture intended for use as a plant regulator, defoliant, or desiccant [13]. The ideal insecticide is one that has low acute toxicity to humans and nontarget species is inexpensive to apply and produce but would have no environmental persistence or bioaccumulation [14].

A rodenticide is any product commercially marketed to kill rodents, mice, squirrels, gophers and other small animals. Rodenticides are a heterogeneous group of chemicals

bearing little or no relationship to one another, apart from their current or historic use as rodenticides [15].

Opioid use is widespread. Overdose and toxicity, both intentional and unintentional, remain major causes of drug-related morbidity and mortality. Lethality related to opioids is primarily caused by respiratory depression. Thus, mechanical ventilation, or administration of a short-acting opioid antagonist such as naloxone, should be adequate initial therapy.

An appreciation of the pharmacologic differences between the various opioids allows for the identification and appropriate management of patients poisoned or otherwise adversely affected by these agents. [16]

The NSAIDs are a large class of drugs that share similar clinical toxicity based on their ability to inhibit COX. The toxicity that results from overdose usually consists of epigastric pain, nausea or vomiting, and mild CNS depression. Uncommonly, severe overdoses result in metabolic acidosis and CNS toxicity, including seizures, apnea, and coma. Necessary clinical management usually is limited to general supportive care and assessment for the presence of additional substances (especially acetaminophen) and risk factors for organ system toxicity. Activated charcoal is indicated as GI decontamination [17].

In general, accidental poisoning is more common in children, whereas suicidal poisoning is more common in young adults. [20] The un-natural causes of Accidental Deaths due to poisoning was 8%. 33.6% of the suicide victims consumed poison. The pattern of suicides reported from 35 cities in India showed that Poisoning constitute 20.6 % of the common causes of suicide. According to accidental death and suicide clock 2009 - 73 Deaths per day are due to Poisoning. In West Bengal Suicides due to consumption of insecticide was 1602 (Male 928 and Female 674) in 2009. [18]

CONCLUSION

It is important to know the nature and severity of poisoning in order to take appropriate preventive measures. Studies of this nature will be a useful tool in planning and management of critically ill acute poisoning cases. The initial approach to the poisoned patient should focus on six major areas: (1) resuscitation and stabilization; (2) history and physical examination, including evaluation for a specific toxidrome; (3) appropriate decontamination of the gastrointestinal tract, skin, and eyes; (4) judicious use of laboratory tests, electrocardiograms, and radiographic studies; (5) administration of specific antidotes, if indicated; and (6) utilization of enhanced elimination techniques for selected toxins. By taking proper measures mortality of acute poisoning cases can be decreased.

REFERENCES

1. Singh S, Sharma BK, Wahi PL. Spectrum of acute poisoning in adults. *J Assoc Physicians India*. 1984; 32:561-3.
2. The Oxford English Dictionary. Oxford, Clarendon Press, 1989.
3. Thompson CJ: *Poison and Poisoners*. London, Harold Shaylor, 1931.
4. Flomenbaum, Neal E.; Goldfrank, Lewis R.; Hoffman, Robert S.; Howland, Mary Ann; Lewin, Neal A.; Nelson, Lewis S. *Goldfrank's Toxicologic Emergencies*, 8th Edition. 2006 McGraw-Hill; Chapter 1 - Historical Principles and Perspectives.
5. Timbrell JA: *Introduction to Toxicology*. London, Taylor & Francis, 1989.
6. Scarborough J: *Nicander's toxicology; I: spiders, scorpions, insects and myriapods*. *Pharm Hist* 1979;21:3-34.
7. Jensen LB: *Poisoning Misadventures*. Springfield, IL, Charles C. Thomas, 1970.
8. Scutchfield FD, Genovese EN: Terrible death of Socrates: Some medical and classical reflections. *Pharos* 1997; 60:30-33.
9. Gaebel RE: Saturnine gout among Roman aristocrats. *N Engl J Med* 1983;309:431.
10. Nriagu JO: Saturnine gout among Roman aristocrats. Did lead poisoning contribute to the fall of the Empire? *N Engl J Med* 1983; 308:660-663.
11. Green DW: The saturnine curse: a history of lead poisoning. *South Med J* 1985;78:48-51.
12. Waldron HA: Lead poisoning in the ancient world. *Med Hist* 1973;17:391-399.

13. Bruno CR, Howland MA, McMeeking A, Hoffman RS: Long-acting anticoagulant overdose: Brodifacoum kinetics and optimal vitamin K dosing. *Ann Emerg Med* 2000;36:262-267.
14. *Insecticides: Organic Chlorines, Pyrethrins/Pyrethroids, and DEET*. Flomenbaum, Neal E.; Goldfrank, Lewis R.; Hoffman, Robert S.; Howland, Mary Ann; Lewin, Neal A.; Nelson, Lewis S. *Goldfrank's Toxicologic Emergencies*, 8th Edition. 2006 McGraw-Hill; Part C - The Clinical Basis of Medical Toxicology; Section I- Case Studies; K - Pesticides; Chapter 110.
15. *Pesticides: An Overview with a Focus on Principles and Rodenticides*. Flomenbaum, Neal E.; Goldfrank, Lewis R.; Hoffman, Robert S.; Howland, Mary Ann; Lewin, Neal A.; Nelson, Lewis S. *Goldfrank's Toxicologic Emergencies*, 8th Edition. 2006 McGraw-Hill; Part C - The Clinical Basis of Medical Toxicology; Section I- Case Studies; K - Pesticides; Chapter 104.
16. *Opioids*. Flomenbaum, Neal E.; Goldfrank, Lewis R.; Hoffman, Robert S.; Howland, Mary Ann; Lewin, Neal A.; Nelson, Lewis S. *Goldfrank's Toxicologic Emergencies*, 8th Edition. 2006 McGraw-Hill; Part C - The Clinical Basis of Medical Toxicology; Section I- Case Studies; A - Analgesics and Antiinflammatory Medications; Chapter 38.
17. *Nonsteroidal Antiinflammatory Drugs*. Flomenbaum, Neal E.; Goldfrank, Lewis R.; Hoffman, Robert S.; Howland, Mary Ann; Lewin, Neal A.; Nelson, Lewis S. *Goldfrank's Toxicologic Emergencies*, 8th Edition. McGraw-Hill. 2006; Part C - The Clinical Basis of Medical Toxicology; Section I- Case Studies; A - Analgesics and Antiinflammatory Medications; Chapter 36.
18. Kamal SN, Verma AK, Sharma MP *Accidental Deaths & Suicides in India 2009*, National Crime Record Bureau, Ministry of Home Affairs, Government of India.