



CLINICAL PROFILE OF PATIENTS WITH RODENTICIDE POISONING IN A TERTIARY CARE CENTER

Dr.Prameela rani Pamarthi	Assistant professor , General Medicine, Siddhartha medical college, Vijayawada.
Dr.Aswathi.V*	Postgraduate , GeneralMedicine, Siddhartha medical college, Vijayawada.*Corresponding Author
Dr.N.V.S.Krishna Reddy	Postgraduate , GeneralMedicine, Siddhartha medical college, Vijayawada.
Dr.DurgaPrasad.S	Assistant professor , General Medicine, Siddhartha medical college, Vijayawada.

ABSTRACT **Background:** Poisoning is one of the leading cause for admission in emergency department and rodenticides are one of the major poisons used. It is highly toxic substance where morbidity and mortality are significant. **Methods:** After obtaining informed consent 100 patients admitted with rodenticide poisoning in Department of General Medicine, Siddhartha medical college is enrolled into the study after fulfilling inclusion and exclusion criteria, data is collected and appropriate treatment is given. **Results:** Out of 100 patients included in the study, 55patients (55%) consumed zinc phosphide. 27patients(27%) consumed warfarin derivatives. 18patients(18%) consumed yellow phosphorous. Female preponderance(54%) was seen in this study. Poisoning is more common below 29years of age. Total of 77patients(77%) recovered without complications, most common symptom is vomiting and complication is acute hepatitis(23%). **Conclusion:** This study shows Yellow phosphorous has the worst outcome. Zinc phosphide is the most common poison consumed and low mortality is seen in zinc phosphide and warfarin compounds.

KEYWORDS : Rodenticide , clinical outcome

Introduction

Rodenticide is a chemical which kills rat, squirrels, mice and other small rodents. An ideal rodenticide kills the rodents effectively and is not toxic to humans and pets when accidentally exposed to them. Such an ideal rodenticide is yet to be identified.

Rodenticide poisoning is one of the common poisonings in India.

Various rodenticide differs from each other in composition, mechanism of action, lethal dose, and toxicity spectrum.

Toxicity ranges from asymptomatic patients to death with complications like Acute Liver Failure, Hepatic Encephalopathy, Bleeding Manifestations due to Coagulopathy, Acute Respiratory Distress Syndrome, Acute kidney injury etc.

Rodenticides are available in various forms like cake, pellet, powder, paste etc.

Compounds like warfarin, super warfarins, zinc and aluminium phosphides, yellow and white phosphorous, thallium, strychnine are present in rat poisons.

This study is about Clinical profile of Rodenticide poisoning in humans and their Outcome in a tertiary care centre.

Aim of the study :

- To study various types of rodenticide poisoning admitted in GGH, Vijayawada and to compare clinical profile, complications and outcomes among them.
- Descriptive analysis of rodenticide poisoning based on Age , Sex, Type of compound, Time from consumption to admission, Clinical features of each type of poison, Outcomes of all the types of poison.

Materials and Methods:

PLACE OF STUDY Department of General Medicine, Siddhartha Medical College, Vijayawada.

STUDY DURATION: October 2021 to July 2022.

STUDY DESIGN: Observational study.

Patients admitted with history of rodenticide poisoning in emergency department and in wards of department of general medicine Siddhartha

medical college, Vijayawada are selected after meeting inclusion and exclusion criteria.

Treatment was given as per standard protocols and they were observed for development of complications.

INCLUSION CRITERIA:

Age > 12 years

All patients with Clinical features or History of Rodenticide poisoning as per ICD 10 T60.4(28) Patient willing for study

EXCLUSION CRITERIA:

Patient not willing for study

Patients < 12 years of age

If rodenticide poison is mixed with other poisons

If patient has pre existing liver disease, cardiac arrhythmias.

Patients with bleeding and coagulation disorders.

Results

Mean age of patients is 28.1.

This study shows rodenticide poisoning is more common in females (54%).

Zinc phosphide is the most common type of poison (55%) followed by warfarins (27%) and yellow phosphorous (18%).

Out of 100 patients, 26 patients (26%) had complications and 74 patients(74%) recovered without complications. Most common complication is acute hepatitis (23%).

Mortality is more in patients who presented > 24 hours (40%). 55patients (55%) consumed zinc phosphide out of which 47(85.4%) patients recovered without complications, 8 patients recovered with complications (14.5%) with zero deaths. 27patients (27%) consumed warfarin derivatives and 24 patients (85.1%) recovered without complications and 4 patients(14.8%) recovered with complication. Zinc phosphide and Warfarin poisoning is associated with good outcomes and zero mortality. 18 patients (18%) consumed yellow phosphorous ,3(16.6%) of them recovered without complications, 9(50%)patients recovered with complications and 6 patients (33.33%) expired. Yellow phosphorous is associated with highest rate of mortality (33.33%) and complications (83.33%).

Most dreadful complication is Acute Fulminant Liver Failure and Acute Respiratory Distress Syndrome (ARDS).

Discussion

Rodenticide poisoning is one of the leading cause of admissions in emergency department. It accounts for higher morbidity and mortality. -In Karanth S, Nayyar V. et.al. study 61.3% of the population belonged age less than 30 years which is similar to our study in which 61% belongs to age less than 30 years⁽⁸⁾.

In Banerjee I, Tripathi SK, Roy AS et al study done shows a male to female ratio of 1: 1.3 with female predominance⁽⁴⁾. In Nalabothu M, Monigari N, Acharya R. et al study⁽³⁾, shows slight male prevalence in a ratio of 1: 1.36. Our study shows more female incidence which is in concordance with Banerjee et al study⁽⁴⁾.

Superwarfarins had the best outcome compared to other rodenticides as it had zero mortality and majority had no complications. This finding is similar to Ying Yu et al and Nalabothu et al studies⁽⁶⁾.

In Pande TK, Pandey S. et al study which was done on white phosphorus poisoning, reported a case fatality rate of 10 to 50%⁽⁵⁾.

In Fernandez and Canzares et al published a case series of 15 patients with yellow phosphorus where the mortality rate is 27%⁽²⁾.

Mortality rate for patients with phosphorous compounds in our study is higher than that of Fernandez et al study.

In Nalabothu M et al study⁽³⁾, Out of 28 patients who were admitted with zinc phosphide poisoning 18 (64.2%) recovered, 10 (35.8%) died. Survival rates are high and mortality rates are low for zinc phosphorous poisoning as per our study compared to Nalabothu M et al study⁽³⁾.

A study conducted in Taiwan by Hsin – Ying Yu et al in 2013 on 2 patients, only 20 % had complications and had zero mortality in patients with superwarfarin poisoning.

In Nalabothu M et al study shows out of 26 patients with superwarfarin compound poisoning there was no mortality documented⁽³⁾. Our study also has similar results compared to above said studies done on superwarfarin compound poisoning.

Conclusions

This study shows rodenticide poisoning is more common in younger age group (<30yrs) and in females (54%).

Zinc phosphide is the most common type of poison.

Yellow phosphorous is associated with highest mortality (33.33%) and complications (83.3%).

Patient who presented early to the hospital has better outcomes.

Patients with metal phosphides and super warfarin compound poisoning has zero mortality and good outcomes.

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