



K63 Epidemiology of Rodenticide Poisoning in Manipal, South India

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After attending this presentation, attendees will gain knowledge about the incidence and prevalence of rodenticide poisoning cases in South India. The toxicoepidemiology of the rodenticide poisoning, will be presented. Attendees will better understand how the hemorrhagic manifestations appear on the body, and the proper diagnosis can be better understood.

This presentation will impact the forensic science community by providing information about hemorrhagic manifestations occurring in rodenticide poisoning and the duration of their occurrence. This research provides more information in an area with little previous research. This presentation will add to research being carried out in forensic medicine by broadening the understanding of how hemorrhagic manifestations occur in rodenticide poisoning cases, enabling a better appreciation of these manifestations in humans.

Human Poisonings due to chemicals like insecticides, rodenticides, etc. commonly occur because of easy accessibility. Poisoning due to rodenticides, even though rare, are not uncommon. The mortality and morbidity due to rodenticides is increasing worldwide. Hence, knowledge about the epidemiology and clinical manifestations of rodenticide poisoning is not only essential for the treating doctor, but also to the forensic pathologist. The hemorrhagic manifestations of rodenticide poisoning can sometimes mimic contusions, posing problems while interpreting the injuries.

In this retrospective research, the toxic epidemiology of fatal poisoning due to rodenticides in this part of the world is described. The hemorrhagic manifestations and altered laboratory findings in the victims will also be discussed.

In the present study, fatal rodenticide cases constituted 13.89% of the total poisoning cases, with the majority of the victims being male. The age of the victims ranged from 2 to 82 years. External hemorrhages were present in only five cases, although hemorrhage in Gastrointestinal Tract (GIT) was seen in a maximum number of victims. The prothrombin time (PT) was increased in 21 cases. The enzymes such as Aspartate Aminotransferase (AST) and Alanine Aminotransferase (ALT) were raised in 20 cases and total bilirubin was raised in 13 cases.

Rodenticides belong to a category of pest control chemicals intended to kill rodents. The chemicals which act as rodenticides are anticoagulants like warfarins, superwarfarines, thallium, phosphorous, metal phosphides, barium carbonate, red squill, strychnine, etc. Though the mechanism of action of various rodenticides is different, all lead to coagulopathy. Various studies done in the past have suggested the hemorrhagic manifestations due to altered coagulation profiles were induced by these rodenticides.¹⁻³ Substantial ingestion produces epistaxis, gingival bleeding, widespread bruising, hematomas, aematuria with flank pain, menorrhagia, gastrointestinal bleeding, rectal bleeding, and hemorrhage into any internal organ. Spontaneous hemoperitoneum has been described. Severe blood loss may result in hypovolaemic shock, coma, and death.¹ Hematoma and hemarthrosis as reported by Greeff, M.C., *et al.* were observed in children who accidentally consumed rodenticide.⁴ Cutaneous hemorrhage and hematemesis were also observed by Dolin E *et al.* in their study.⁵ Similar observations were made in this study also.

In conclusion, hemorrhagic manifestations as a result of rodenticide poisoning can be misinterpreted as being due to assault. The differential diagnosis is quite broad and includes all causes of vitamin K deficiency, Disseminated Intravascular Coagulation (DIC), and liver disease. Perusal of hospital records is highly recommended for coagulation profile and is of paramount importance while concluding mode, manner, and cause of death. Rodenticide poisoning as a probable cause should be considered in nontraumatic bruises associated with suspected poisoning cases encountered at autopsy.

References:

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Epidemiology, Rodenticide, Hemorrhages