

“INCIDENCE OF SUPERVASMOL POISONING IN TERTIARY CARE HOSPITAL AND PROFILE OF ACUTE KIDNEY INJURY AND ITS OUTCOME IN SUPERVASMOL POISONING”

General Medicine

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ABSTRACT

Background: Hair dye poisoning with super vasmol is an emerging problem in the developing parts of the world mainly because of the easy availability of the substance. The active ingredients in the dye which has toxic effects are para-phenylene-diamine, resorcinol, propylene glycol and EDTA sodium. Para-phenylene-diamine is responsible for most of the clinical features of the patients presenting with hair dye poisoning **Aim And Objectives:** To understand the incidence of Vasmol poisoning cases and to study the profile of Acute Kidney Injury and its outcome in General medicine and Emergency Units in GGH, Kadapa **Patients And Methods:** A prospective study was done on 98 patients over a period of 18 months with patients getting admitted with super vasmol poisoning. Patients with already known case of CKD and presenting with other causes of AKI are excluded from the study **Results:** Among the 274 poisoning cases, the incidence of supervasmol poisoning is 35.8%. In the present study, out of 98 study participants with supervasmol poisoning, 31 (31.6%) had acute kidney injury. Out of the 31 patients with AKI, 13 had hemodialysis. **Conclusion:** Acute kidney injury is one of the major complication of super vasmol poisoning. Most of the patients with acute kidney injury will recover spontaneously but some patients need Hemodialysis

KEYWORDS

Supervasmol, acute kidney injury, hypocalcemia

INTRODUCTION

When a poison comes into touch with the human body, it creates hazardous effects. Suicide poisoning is thought to be the most common, followed by accidental poisoning and a very low reported rate of homicidal poisoning in India. The incidence of poisoning in India is unknown, although it is estimated that 1 to 1.5 million cases of poisoning are admitted to hospitals each year, with about 50,000 cases succumbing. Hair dye poisoning is growing more common in developing countries. One of the reasons for this being a popular technique of suicidal poisoning is the easy availability and lower prices.

Hair dyes are divided into three categories¹

1. Oxidative or permanent dyes
2. Dyes that are temporary, semi-permanent or direct
3. Metal or natural salts

Supervasmol is one of the most widely used hair dyes.

Aims And Objectives of Study

Aim of The Study:

To understand the incidence of Vasmol poisoning cases and to study the profile of Acute Kidney Injury and its outcome in General medicine and Emergency Units in GGH, Kadapa.

Objectives:

Primary Objective:

To find out the incidence of super vasmol poisoning among all poisoning cases and incidence of acute kidney injury in super vasmol poisoning.

Secondary Objective:

To find out the requirement of hemodialysis in patients of supervasmol poisoning with acute kidney injury.

PATIENTS AND METHODS

Study design:

This study was a prospective observational hospital-based study.

Study setting:

This study was conducted in the ICU and emergency unit of GGH, Kadapa.

Study duration:

The study was conducted for 18 MONTHS after the approval of the hospital ethical committee. Study population: This study was conducted among poisoning patients who attended ICU and Emergency Units in GGH, Kadapa.

Inclusion criteria:

Individuals who are attending ICU and Emergency units with history of consumption of super vasmol poisoning.

Exclusion criteria:

Already known case of CKD

Presenting with other causes of AKI Patients who were not willing to give consent for the study

Investigation: CBC, DC, RFT, LFT

ECG Data collection:

The study was started after obtaining Institutional ethical approval. The purpose and procedure of the study were explained to the participants in their local language. A patient information sheet and informed written consent was obtained from the participants before initiating the study.

Ethical consideration:

Institutional Ethical Committee approval was obtained before starting the study. The participants were explained that the data collected in this study would be used only for research purposes. The participants were explained about the freedom of withdrawal from the study at any time without penalty or loss of benefits. The confidentiality of the data collected from the enrolled participants was maintained in all the phases of the study. The study participants who required medical attention during the period of intervention will be given appropriate medical care.

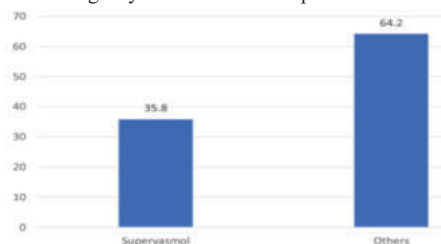
Statistical Analysis:

The collected data were checked for completeness before entering into the Microsoft Excel spreadsheet. The validation of the data was checked at regular intervals. Data analysis was performed with an intention to treat approach using Statistical Package for Social Sciences (SPSS IBM). The quantitative data were expressed in frequency and percentage.

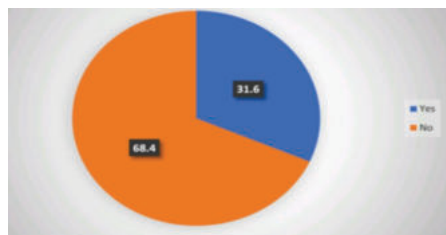
DISCUSSION

Poison is responsible for 2.1 per cent of all Intensive Care SS unit hospitalizations and 1.2 per cent of all deaths in this demographic. Poisoning and death as a result of poisoning are largely preventable, and many people die within 6 to 8 hours of being exposed to the poison, with a high number of these persons dying before reaching the hospital. Suicide poisoning is more common in the lower and lower-middle socioeconomic classes. Supervasmol is an emulsion-based hair colour that is widely used.² The dye comprises a number of chemicals, the most important of which is paraphenylenediamine, which is

responsible for the life-threatening events that occur after consuming the dye. Other hair dyes that contain para-phenylenediamine include Godrej, Keshkala, and Colormate, among others. The most dangerous and common late symptom of PPD overdose is renal damage. Acute tubular necrosis is caused by PPD, which leads to acute kidney damage. The para-phenylene-diamine connects to the sarcoplasmic reticulum of the muscle, prompting it to release more calcium. As a result, intracellular calcium levels rise, causing muscle contractions to continue, eventually leading to rhabdomyolysis. When muscle fibres lyse, myoglobin, which is found inside the muscle, is released into the bloodstream. This molecule then accumulates in the renal tubules, causing acute tubular necrosis and, eventually, acute kidney damage. Patients with poisoning in the early or acute stages frequently have normal renal function. However, renal functions must be examined on a frequent basis since there is a higher risk of developing acute kidney injury as a result of myoglobin-related acute tubular necrosis. Once the patients suffer acute renal injury, they will notice a gradual increase in blood urea and serum creatinine levels. The fall in serum calcium levels is due to the greater intracellular shift of calcium and its enhanced use. Hypocalcemia becomes more severe as the amount of poison taken and the degree of rhabdomyolysis grows. In the treatment of poisoning caused by PPD-containing hair dyes, universal decontamination is critical, and supportive therapy is critical. Patients have been given forced alkaline diuresis, which has been demonstrated to be effective in preventing the onset of acute renal injury. Acute kidney injury is treated with hemodialysis as a temporary renal replacement treatment. Gastric decontamination is performed. If done within 4 hours of ingesting the poison, gastric lavage has been found to be effective. Oedema is treated with intravenous glucocorticoids such as hydrocortisone and anti-histaminic. This entails modifying the pH of the urine, i.e., making it alkaline, in order to eliminate acidic chemicals. This causes the acidic chemicals in the renal tubular fluid to become more ionised. The tubular cells prevent the ions from moving into the interstitial space once the fluid has become ionised in the renal tubules. The targeted component is concentrated and expelled in the urine as a result of this process. Patients are given an intravenous loop diuretic, such as frusemide 20 mg iv bolus, and their urine output is monitored. The main goal of forcing the patient to undergo forced alkaline diuresis is to remove all of the myoglobin that is released into the circulation and enters the renal tubules. The present study was done with the objective to determine the incidence of vasmol poisoning and assess the profile of acute kidney injury and its outcome in general medicine and emergency units in GGH Kadapa.



Incidence of Poisoning Supravasmol



Incidence of Acute Kidney Injury

Acute Kidney Injury:

In the present study, out of 98 study participants with supervasmol poisoning, 31 (31.6%) had acute kidney injury. Out of the 31 patients with AKI, 13 had hemodialysis. Among the study participants with more than 50 ml consumption of supervasmol, 80.6% had AKI. In a study done by Khuhro BA et al.,⁴ 19% of the patients had Acute Kidney injury. In a study done by Chrispal A et al.,⁵ 38.5% of the study participants had acute kidney injury. In a study done by Radhika D et al.,⁶ 21% of the study participants had acute kidney injury. More than 50ml of hair dye is enough to cause significant local effects, primarily oedema of the face, neck, pharynx, larynx, and vocal cords, which can lead to respiratory distress due to airway obstruction and systemic

toxicity, primarily rhabdomyolysis, which causes myoglobin deposition and clogging of the proximal renal tubules. This results in acute tubular necrosis, which leads to acute kidney damage.⁷

CONCLUSIONS AND SUMMARY:

The main objective of the study was to determine the incidence of vasmol poisoning and to assess the profile of acute kidney injury and its outcome in general medicine and emergency units in GGH Kadapa.

Among the 274 poisoning cases, the incidence of supervasmol poisoning is 35.8. The present study has shown that 31.6% of the study participants had creatinine levels more than 1.5, and 26% of the study participants had urea levels more than 40.

In the present study, out of 98 study participants with supervasmol poisoning, 31 (31.6%) had acute kidney injury. Out of the 31 patients with AKI, 13 had hemodialysis.

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