



Case Report

Hair dye – An Emerging icon – As a Suicidal agent – A short report

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ABSTRACT:

We are presenting a case of Super Vasmol poisoning (Paraphenylenediamine – PPD), a house hold product, rapidly emerging as a suicidal agent in most of the parts of Andhra Pradesh and Tamilnadu. The case report emphasizes the need of emergency evaluation and treatment as well as advantages of autopsy to combat with such newer suicidal agents in future.

KEY WORDS: Super Vasmol poisoning, Suicidal agent.

INTRODUCTION:

Suicide has nowadays become one of the common modality of death in young and educated people. The knowledge and awareness of action of most of the household products have turned them into suicidal agents. For example, a hair dye – Super Vasmol 33, which constitutes of Paraphenylenediamine (PPD) is commonly available and cheap product, which probably is nowadays more used as a suicidal agent, rather than as a hair dye. It has been reported that it is responsible for accidental and incidental cause of poisoning in underdeveloped and developing countries of Africa[1] and Asia[2]. Enormous

study was and is being done regarding this agent in India. The majority of these cases was reported from Andhra Pradesh [3] and Tamilnadu [4]. We hereby submit a case of Super Vasmol Poisoning with all the clinical features of potential toxic agents of product in the patient and characteristic findings during autopsy of the deceased.

CASE REPORT:

A 34 year female was brought to the emergency ward at 7:00 AM, alleged to have consumed 150-200 ml (approximately) of hair dye an hour ago. On examination the patient was found drowsy and

non co-operative. On evaluation it was found that, there was generalized pallor, poor response to verbal commands, neck swelling and puffiness of face, dyspnea, excessive sweating, and hematuria. Pupils were of normal size reacting to light. Pulse – 78/min and Blood Pressure – 100/60 mm of Hg. As soon as, clinical evaluation was done, constitutional symptomatic treatment was started with Intravenous fluids – 5% Dextrose and Dextrose Normal Saline; Inj. Ranitidine – 2 ml IV; Inj. Hydrocortisone – 2 ml IM stat; Inj. Chlorpheniramine maleate – 2 ml IM. In the meantime blood and urine was collected for routine and specific investigations and sent to emergency lab. The patient's vital signs were deteriorating. Thus, she was shifted to the Intensive care unit. An emergency tracheotomy was done and the patient was connected to a ventilator, she was catheterized with Foley's. The lab investigations showed Hemoglobin – 9.2 gms%; Total Leukocyte count – 18500 cells/cu.mm; DC – Neutrophilia; ESR – 18 mm/1sthour; Platelet count – 2.2 lakhs/cu.mm. Biochemical investigations – Random Blood sugar – 140 mg/dl; Blood urea – 60 mg/dl; Serum Creatinine – 1.5 mg/dl; Serum Bilirubin – 1 mg/dl; SGOT – 450 U/L; SGPT – 200 U/L; Alkaline Phosphatase – 150 U/L; Creatinine Phosphokinase – 25000 U/dl; Serum Electrolytes showed – Hyperkalemia. Urine examination revealed, Proteinuria, Hematuria/Hemoglobinuria.

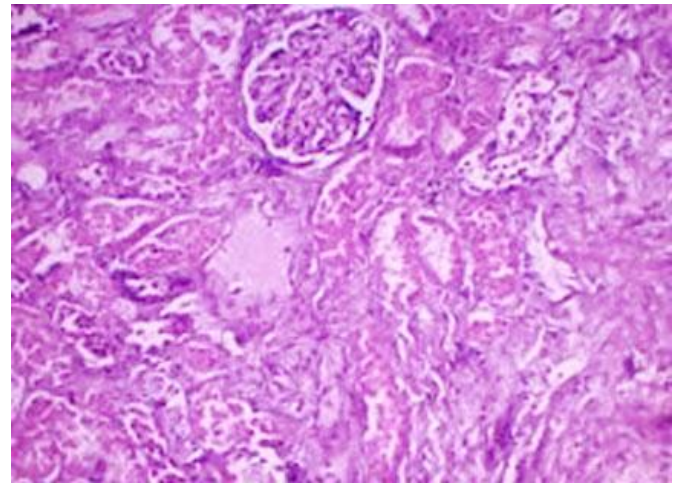
After the assessment of lab reports and clinical status of patient, mechanical ventilation was continued. To alleviate Metabolic acidosis Sodium Bicarbonate infusion was given under arterial blood gas control. After 12 hours of vigorous treatment patient developed Generalized Clonic Tonic seizures, which were controlled by Inj. Midazolam (IV). Urine output was continuously monitored which showed gradual decrease after 24 hours (800ml). Thus, the patient developed Oliguria. The Renal parameters were still not under control and there were persistent episodes of seizures. Peritoneal dialysis was performed on the 3rd day. Still the patient was devoid of any signs of improvement. There were

signs of pulmonary edema, persistent hypotension and metabolic acidosis. The patient could not maintain normal spO_2 even after ventilation with 100% oxygen. Despite all efforts patient developed cardiac arrest. Cardiopulmonary resuscitation was done, but there were no signs of improvement. Thus, the patient was declared dead on 4th day of admission and the corpse was handed over to the custody for legal proceedings and postmortem examination. An autopsy was done with all legal proceedings. External findings revealed edema of the face and neck, swelling of tongue, distension of abdomen and generalized pallor. There was no evidence of any wounds or ligature marks. Internal examination revealed massive congested and edematous lungs – Pulmonary edema. Heart showed mild cardiomegaly, dissection of heart showed normal features; Liver showed congestion; Spleen was normal; Kidneys were externally normal, cut-section showed – mild cortical medullary disruption, congestion and grayish yellow necrotic areas. Brain appeared normal. All the visceral organs were subjected to histopathological examination. Lungs showed edema and congestion with minimal inflammation. The liver showed – focal fatty change, inflammatory cell infiltrates, congested and dilated blood vessels. Thus, Steatohepatitis was evident. Spleen was normal. Kidneys showed numerous abortive tubules, surrounded by peritubular acute inflammatory cell infiltrate, hyalinised blood vessels and focal aggregates of Neutrophils and Macrophages. There are at places degenerated glomeruli with intervening thick fibro-connective tissue bands showing hyaline change – thus, giving the appearance of Acute Tubular Necrosis. Thus, a thorough evaluation was done and Autopsy report was dispersed as – Primary cause of death being Sudden Cardiac arrest due to multisystem dysfunction superadded by Acute Tubular Necrosis with Acute Renal failure.

Figure 1:Gross features of dissected organs sent for Histopathological examination



Figure 2:Microscopic features of Kidney (Rt) showing features of Acute Tubular Necrosis.



DISCUSSION:

Hair dye poisoning is rare in western countries[5], but it is still a common occurrence in Africa[1], Middle East and Indian sub-continent[2]. The first artificial dye was synthesized in the laboratory in 1856. Thus, the hair coloring agents are being used for more than 150 years [6]. Paraphenylenediamine (PPD) is a coal tar derivative. On oxidation it produces Bondrowski's base. It is allergenic, mutagenic and highly toxic[7]. Primarily it is used in dye to shorten the duration of application and for intensification of color of henna (*Lawsonia Alba*) [8]. The first documented PPD poisoning, in an owner of a hair salon was by Nott in 1924[5]. The features of PPD poisoning vary based on its dose of ingestion. The features are – severe cervicofacial odema, Angioneuroticodema, muscular odema, Rhabdomyolysis and intravenous hemolysis leading to hematuria and hemoglobinuria resulting in Acute renal failure[7].Rhabdomyolysis is caused by leakage of calcium ions from smooth endoplasmic reticulum resulting in prolonged muscle contraction and irreversible change in muscle structure[9]. Cardiotoxicity is also seen, features of myocarditis are evident. Other changes reported are – fatal arrhythmias[8], anemia, leukocytosis, liver necrosis[2], metabolic acidosis, hyperkalemia[3].

In the present case as the dosage of ingestion is more, all the above features were observed.

Resorcinal is the next toxic compound which is also used in tanning and photography. It is a phenolic compound. It is Neurotoxic causes – seizures, lethargy, coma and death. It may also result in some Gastrointestinal symptoms – Nausea, vomitings etc., Autonomic dysfunction – Excessive salivation and sweating; hypotension. Respiratory signs & symptoms – Bronchospasm and Pulmonary edema [3]. The above features were evident in the present case. Propylene glycol is the agent which causes – Metabolic acidosis (high anion gap);hyperosmolarity – Nephrotoxicity, leading to Acute tubular necrosis, which was observed in present case. Central Nervous system depression and cardiac arrhythmias are also observed in some cases. Ethylene Diamine Tetra Acidic acid (EDTA) leads to headache, vomiting and gastritis [9].

The stage of Acute Renal Failure (ARF) is a checkpoint of this scenario of Super vasomol poisoning. The extent of morbidity and mortality is high once ARF develops. The mortality rates vary between 0.03% to 60% [7]. The patients require emergency and intensive care with ventilator support, Dialysis and continuous

monitoring of lab reports. Thus extraordinary care has to be taken in these patients.

CONCLUSION:

This case report has emphasized the role of common household products being used in the wrong manner in the society. Moreover, as there are numerous toxic components in a single product a single specific antidote cannot make a difference. Varied combinations of drugs are to be used. The autopsy findings always help in giving a clue regarding emerging new and unknown suicidal agents which may possess similar components as of Super vasmol hair dye. Thus, can help the society by spreading awareness regarding potential lethality of newer toxic components used in common household products. Treating a patient can save one's life, creating awareness can save entire society.

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