

**A CASE REPORT OF SUPERVASMOL POISONING - A SUCCESSFUL RESUSCITATION****Thirugnanam P\*and Swaminathan P**

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**ABSTRACT**

Cases of hair dye poisonings are emerging in India. We report a case of hair dye poisoning (super vasmol 33) which was successfully stabilized and treated. Compound responsible for hair dye toxicity is paraphenylenediamine (PPD) resorcinol, sodium ethylene diamine tetra acetic acid and propylene glycol which can result in multiorgan dysfunction. The patient had developed cervicofacial edema with severe airway compromise. Prompt recognition and effective management lead to complete recovery of the patient.

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**INTRODUCTION**

Poisoning due to hair dye is not rare in India, but emerging as a challenge to the emergency department(ED). The compound responsible for the toxicity is paraphenylenediamine (PPD). PPD is present in most hair dye brands like 'super vasmol 33', 'Godrej', Kesh kala, colour mate etc. which are available in powder or liquid forms. It is also used by photographic developers, tyre cord industry, for accelerating vulcanization and used with "Henna" for dyeing hands and feet by women. The concentration of PPD varies from, 2 to 10% in branded dyes. The hair dye is extremely cheap and freely available, making it an attractive option for suicidal intent<sup>1</sup>.

The toxicity of PPD includes skin irritation, contact dermatitis, chemosis, lacrimation, exophthalmos, or even permanent blindness, due to local contact. Vomiting, gastritis, hypertension, vertigo, tremors, and convulsions have been reported. Acute ingestion causes characteristic severe angioedema of the upper airway, lethal dose of PPD is not known; estimates vary from 7-10 grams. The characteristic chocolate brown colour of the urine could be confirmative evidence of hair dye poisoning in individual with the poisoning of PPD (Presence of hair dye in urine can be confirmed by thin layer chromatography in the lab)<sup>2</sup>. Ingestion of PPD produces two phases of toxic effects. The first phase consists of rapid development of severe edema of the face, neck, pharynx, tongue, and

larynx with respiratory distress, often requiring tracheostomy.

In the later phase, rhabdomyolysis and acute tubular necrosis supervene<sup>3</sup>. There is no antidote for PPD poisoning. If the poisoning is not recognized early, it has a very high mortality.

**Case Report**

An 18 year old female presented to the ED with alleged history of consumption of 100 ml of Supervasmol hair dye on 18/03/2017 at 5 pm. She had undergone primary treatment at mayiladudurai GH. She was brought to our hospital at around 1.30am on 19/03/2017 with complaints of difficulty in breathing for the last 4 hours. The patient was connected to cardiac monitors and pulse oximetry. On examination the patient was conscious oriented, GCS-15/15 tongue swelling was present, (DOUBLE TONGUE APPEARANCE) neck swelling present, responding to oral commands. Vitals were HR- 116/min, BP-100/60mmhg Spo2-88% on room air . On auscultation rt. Lung had crepitations, remaining systemic examination were normal. Oxygen was started at 6 Litres/min and Ryle's tube insertion with gastric lavage was done to prevent the aspiration. The initial Mallampatti scoring for Airway assessment was 2. In meantime blood samples were taken, within ten minutes the saturation started dropping.

An emergency cricothyroidotomy was planned immediately in ER, the patient was adequately sedated

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and the procedure was done and initially an ET tube of size 6 mm was inserted and fixed. The position was confirmed by 5 point auscultation, Patient was connected to mechanical ventilator and the saturation gradually reached 100%.



The patient was shifted to ICU: With the anticipation for Rhabdomyolysis and Acute renal failure, all the blood investigations were sent including CPK (Creatine Phosphokinase). ABG showed metabolic acidosis. Gastric lavage with soda bicarb was given. Patient was given adequate steroids, antihistamines and adrenaline for reducing angioedema. Forced alkaline diuresis was also done immediately to prevent ARF. The next day patient was planned for converting into definitive tracheostomy and successfully replaced by tracheostomy tube of size 6mm. Investigations like RFT and CKMB -Total were under normal limits. Patient was treated in our medical ICU for 12 days and was discharged on 2<sup>nd</sup> April 2017. Patient was healthy and comfortable. Timely airway management saved the patient's life.

## DISCUSSION

In 1924, Nott<sup>4</sup> described the first case of systemic toxicity with PPD in the owner of a hair salon. Sood et al and Chugh *et al* have reported cases from India. Our patient had most of the features of PPD toxicity: Angioneurotic edema over face and neck. The toxic effects of PPD are dose related. This poison can be accidental, suicidal or homicidal. It is also used as abortifacient.

### Systemic toxicity

Systemic toxicity occurs in two phases: Early phase - (within hours) GI symptoms like epigastric pain, vomiting, dehydration, airway emergencies like angioedema, respiratory failure, cyanosis, rarely ocular manifestations

like optic neuritis and permanent blindness Late phase (days to weeks) - renal failure due to acute tubular necrosis, rhabdomyolysis manifested as oliguria and anuria. In our patient airway emergency was manifested and effectively managed which greatly influenced the prognosis of the patient.

The most important aspect of management is early recognition of poisoning by this compound, supportive measures that include gastric lavage with 2% soda bicarbonate and alkalization of urine. Hypoxia is the major early challenge, which may require ventilatory support. Drugs used include hydrocortisone, antihistaminics and vasopressors.

Renal support in the form of dialysis is required in ARF but we have used forced alkaline diuresis for elimination of the toxin. The patients RFT were under normal limits, and the patient didn't suffer from rhabdomyolysis or ARF. This may be attributed to early preventive measures undertaken.

## CONCLUSION

- ❖ Hair dye is available in several forms, is easily available and is inexpensive and
- ❖ Hence awareness of this poison and its effects is important. Poisoning is more common in female and in younger age group. Early clinical diagnosis and interventions are the cornerstone of management. Diagnosis requires a high degree of suspicion, as the clinical features are quite distinctive.
- ❖ Respiratory failure mainly determines the short term prognosis, whereas longterm
- ❖ Prognosis is affected by muscular and renal damage.

Steroids play an important role in treatment of angio neurotic edema. It reduces edema markedly and improved associated respiratory distress in our patient.

Preventing renal failure is a very Important goal in systemic PPD intoxication, since its occurrence would be associated with mortality and an increase in ICU stay. Adequate hydration, alkalization of urine and the correction of the hemodynamic disturbances can prevent occurrence of life threatening events. Always Anticipate for Airway Emergency, Early, Airway intervention improves the prognosis of the patient in hair dye poisoning.

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