Hair Dye Poisoning

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Abstract

Hair dye ingestion is an uncommon form of poisoning in the west, however, in some parts of the world such as East Africa and Indian Sub-continent it is not uncommon. The main component of hair dye causing toxicity is Paraphenylenediamine (PPD). This compound has been found to cause angioneurotic edema, rhabdomyolysis and renal failure. We present a case of hair dye poisoning who presented with respiratory distress due to laryngeal edema and later developed trismus and carpopedal spasm. This case report highlights the combined toxicities of sodium EDTA and PPD. ©

INTRODUCTION

The major component of hair dye is paraphenylenediamine (PPD). Consumption of PPD can produce laryngeal edema, rhabdomyolysis and renal failure. This case report serves to highlight these toxicities in addition to the effects of sodium EDTA. The importance of a thorough toxicological review is illustrated, and treatment and manifestations of hair dye poisoning are reviewed.

CASE

A 37 years housewife was brought to the emergency department with the complaint of having consumed hair dye – Super Vasmol 33 (PPD based emulsion type hair dye), 300ml three days prior to presentation. She had been rushed to a local hospital where an emergency tracheostomy was performed for dyspnea and laryngeal edema. She was then referred to our hospital for further management. At presentation she had complaints of inability to open her mouth and cramps in her hand. On examination, she was found to have trismus and carpopedal spasm and both Chvostek's and Trosseau's signs were positive. Systemic examination was normal, apart from the aforementioned abnormalities. Her urine was of black colour, which made us suspect PPD poisoning. Investigations obtained revealed hypocalcemia with serum calcium being 7.0 mmol/l (corrected calcium – 7.8 mmol/l) with normal sodium, potassium, creatinine and phosphorus values. Intravenous correction with calcium gluconate was given and her symptoms improved rapidly. On reviewing the contents of the hair dye it was found to have – PPD (4%), sodium EDTA, resorcinol and liquid paraffin. The quantity of PPD ingested was thus calculated to be 12gm, which is a toxic dose. As rhabdomyolysis is a well-known complication of PPD poisoning, her CPK was done which was markedly elevated with a value of 20610 µ/dl. A diagnosis of rhabdomyolysis due to PPD was made and she was started on hydration to avoid renal failure secondary to the rhabdomyolysis. Her CPK repeated 48 hours later was 3610 and her creatinine was normal. By the fifth day her tracheostomy tube could be removed and she was discharged. The patient was subsequently referred to the Psychiatry department for counseling. At follow up, she was completely asymptomatic.

DISCUSSION

Hair dye (Vasmol™) poisoning is an uncommon form of intoxication in the West though it is fairly common in some parts of the world such as Africa. The main component of hair dye is Paraphenylenediamine (PPD). The main toxicities of this compound include severe oedema of the face and neck frequently requiring emergency tracheostomy. This is followed by rhabdomyolysis and acute renal failure, culminating in death if not treated aggressively. In this case the patient developed laryngeal edema and underwent an emergency tracheostomy, following which the patient developed rhabdomyolysis, however, due to timely intervention renal failure was prevented.

This case was interesting because, besides the usual manifestations of PPD poisoning, the patient presented with features of hypocalcemia requiring IV calcium correction. Manifestations such as these have been described earlier in hair dye poisoning. In these cases it was, however, the result of renal failure. Our patient had no evidence of renal failure, and the cause of the hypocalcemia was thought to be sodium EDTA, which is a component of hair dye in addition to PPD. The toxicity resolved with adequate calcium correction. The other toxic component of the hair dye was resorcinol, which is a corrosive and also causes methemoglobinemia and renal toxicity. The patient however did not have any
evidence of resorcinol poisoning.

This case highlights the major toxicities of hair dye and also highlights the importance of a thorough review of the toxicology of all components of any ingested substance.

REFERENCES


Announcement
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