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Uma Rani R

Professor and Head, Department of Veterinary Clinical Complex, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Theni, Tamil Nadu, India

Richard Jagatheesan PN

Dean, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Theni, Tamil Nadu, India

Arun R

Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Theni, Tamil Nadu, India

Sowbharenaya C

Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Theni, Tamil Nadu, India

Vishnurahav RB

Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Theni, Tamil Nadu, India

Corresponding Author:

Uma Rani R

Professor and Head of Veterinary Clinical Complex, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Theni, Tamil Nadu, India

Management of natural hair dye poisoning in a dog

Uma Rani R, Richard Jagatheesan PN, Arun R, Sowbharenaya C and Vishnurahav RB

Abstract

Hair dye poisoning in a dog is usually attributed to the ingredients like henna, active ingredient paraphenylenediamine (PPD), and other chemical constituents. The common complications of hair dye are respiratory obstruction and acute renal failure. A 3-year-old spitz male dog was presented after an hour of accidental ingestion of hair dye with a history of having vomiting, and excessive drooling. Early and timely intervention in the present case with endotracheal intubation, oral administration of activated charcoal, and injections normal saline, soda bicarbonate, chlorpheniramine, dexamethasone were shown to be beneficial and helped to save the animal without any complications.

Keywords: Dog – hair dye - poisoning – medical management

Introduction

Henna (*Lawsonia inermis*) is shrub-bearing leaves that are crushed and used worldwide as a cosmetic agent to stain the hair. Though henna has anti-inflammatory, analgesic, and antipyretic effects, it causes serious side effects if it is ingested excessively. The chemicals used in hair dye are extremely toxic and could cause serious illness if ingested by the dog. Henna along with paraphenylenediamine (PPD) is used to dye the hairs (Prabhakaran, 2012)^[10]. Ingestion of hair dye containing henna and PPD causes gastrointestinal ulceration, upper airway edema compromising the airway, rhabdomyolysis, acute renal failure, and multi organ damage (Jain *et al.*, 2011)^[7]. Myocarditis is a rare complication, which is also life threatening (Jain *et al.*, 2012)^[8]. Unless the patient is monitored continuously and prompt treatment instituted, it may prove fatal (Ram *et al.*, 2007)^[11]. The present report records a rare case of hair dye poisoning in a dog and its successful medical management.

Case History and Observations

A 3-year-old spitz male dog was presented with a history of having vomiting, and excessive drooling, after an hour of accidental ingestion of hair dye, and the owner washed the mouth of the pet with copious water to remove the remnants of hair dye before the presentation. The pet owner brought the hair dye packet along with the remaining content. It was observed that the animal ingested half a packet of hair dye around 7- 8 gm. The ingredients in the hair dye were Henna, paraphenylenediamine (PPD), carboxy methyl cellulose, sodium perborate, sodium sulphate, Amla, Shikakai, and Aritha.

On clinical examination, the dog was showing excessive salivation, mild dehydration, lethargy, and weakness. Serum biochemistry and complete blood count were within the normal limits. Normal temperature and mild elevation in the heart rate, pulse rate, and respiratory rate were observed. Based on the history and clinical examination the case was diagnosed as natural hair dye poisoning.

Treatment

The animal was given immediately activated charcoal at a dose of 5 g/kg orally to bind the active ingredients of the dye. The animal was intubated with an endotracheal tube to maintain the patent airway. Isotonic normal saline i/v, Inj. chlorpheniramine i/m, Inj. Dexamethasone i/v and soda bicarbonate i/v were given. The animal slowly recovered to normalcy during the observation period of three hours after the treatment. Advised the owner to give the dog some milk at home to dilute the dye and avoid any irritation in the gastrointestinal tract and keep the pet away from the reach of poisonous substances and chemicals as dogs can gain access to many things we use around the house, including hair dyes and the chemicals.

Discussion

Human hair dye should never be used on dogs or other pets as it contains toxic chemicals and it usually takes more than a lick to cause serious complications. Formulations of natural hair dyes containing henna, additive darkening agent paraphenylenediamine (PPD), and a host of other chemicals can lead to poisoning when ingested (Al-Shaikh, *et al.*, 2018)^[13]. The symptoms of hair dye poisoning in dogs are coughing, excessive drooling, vomiting, diarrhoea, lethargy, shock, burns, tremors, seizures, weakness of limbs, and nausea (Hamdouk, *et al.*, 2011)^[6]. Jarde, *et al.*, (2013)^[9] reported hemolytic anemia and renal tubular dysfunction in an 8-year-old female spayed Border Collie which was presented 5 days after ingestion of a box of natural hair dye containing *Lawsonia inermis* (henna). Myocarditis, myocardial rhabdomyolysis, laryngeal edema, severe metabolic acidosis, acute renal failure, and shock have been described in PPD poisoning (Brahmi, *et al.*, 2006)^[5].

The major cause of mortality is respiratory distress due to laryngeal edema, complications related to myocarditis, and renal failure. The cause of acute tubular necrosis in PPD poisoning, independent of rhabdomyolysis is due to the concentration of PPD in the renal tubules. Rhabdomyolysis is the main cause of acute renal failure and the morbidity and mortality are high once renal failure develops. Hypovolemia and the direct toxic effects of PPD or its metabolites on the kidneys also contribute (Bahi *et al.*, 2005)^[3].

The amount of poison ingested, hyperkalemia, hypocalcemia, and hyperphosphatemia were predictive of mortality (Sampathkumar and Yesudas, 2009)^[12]. The common causes of death in hair dye intoxication were respiratory obstruction (71.4%) and renal failure (28.6%) as suggested by Elgamel and Ahmed, 2013^[2]. Hair dye poisoning is a medical emergency and there is no specific antidote available for hair dye with natural henna and PPD poisoning. Emergency measures include decontamination of poison, endotracheal intubation, and correction of metabolic acidosis. Rinsing the oral cavity with copious water and administration of milk may alleviate the gastric symptoms as also followed in the present case by the pet owner. Methods of decontamination include induction of emesis and gastric lavage, dilution of corrosive substances, and disruption of gastrointestinal absorption via administration of activated charcoal and cathartics. In the present case, emesis was not advocated as the animal was already vomiting instead activated charcoal was administered to bind the active ingredients of the hair dye and thereby disrupt the gastrointestinal absorption of the poison. Gastric lavage with 2% sodium bicarbonate is also effective (Sampathkumar and Yesudas, *loc. cit.*). Severe respiratory distress requires ventilatory support. A mild case of respiratory involvement can be managed with chlorpheniramine and hydrocortisone.

In the present case, as soon as the owner noticed the symptoms and knew for sure that his dog has swallowed hair dye brought the animal immediately along with the hair dye packet which enable to know how much and what type of chemicals the dog has swallowed. Immediate arrival to the hospital, early and timely intervention with activated charcoal administration, endotracheal intubation, normal saline, soda bicarbonate, chlorpheniramine, and dexamethasone injections were shown to be beneficial. Intravenous administration of soda bicarbonate and normal saline would have ameliorated the development of acute renal failure in the present case.

Summary

Successful medical management of henna and PPD poisoning in a 3-year-old spitz male dog was reported.

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