Case Report

Right Bundle Branch Block: An Uncommon Cardiotoxic Manifestation of Hair Dye Poisoning-A Case Report

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ABSTRACT
Hair dye poisoning has been rising in incidence in the recent years. Apart from the commoner manifestations of upper airway edema, rhabdomyolysis and acute renal failure, cardiac toxicity, convulsions and sudden cardiac death are relatively rare complications. We discuss a case of hair dye poisoning manifesting as oropharyngeal edema along with cardiac complication. The patient survived.

INTRODUCTION
The incidence of Hair dye poisoning is increasing in many places in India [1, 2] and it constitutes a significant proportion of the poisoning cases in some regions [3]. It manifests as upper airway edema compromising the airway, rhabdomyolysis, acute renal failure and multi organ damage [2]. Myocarditis is a rare complication, which is also life threatening [4]. Unless the patient is monitored continuously and prompt treatment instituted, it may prove fatal.

CASE
A 15-year-old male presented to the emergency department 1 hour after consumption of 70ml of Hair dye with complaints of difficulty in breathing, swelling in the neck region and vomiting. The patient’s mother revealed that he had no prior history of poisoning, epilepsy and heart disease. Examination revealed edema of the submandibular, sublingual & lingual area. There was no carpopedal spasm or trismus. Patient was anxious with a pulse rate of 108/minute, respiratory rate of 26/minute, Blood pressure – 110/70mmHg. Patient was given oxygen therapy, Injection Hydrocortisone sodium 200mg stat followed by 100mg tds, Injection Chlorpheniramine maleate 2ml i.m bd, Injection Ranitidine 50mg i.v. bd, intravenous antibiotics (Parenteral Cefotaxime) & FAD (Forced Alkaline Diuresis) cycle was started. Electrocardiogram showed sinus tachycardia [Table/Fig-1] (a). The pulse rate was 120/minute, Blood pressure 116/70 mmHg and respiratory rate was 32/minute. As the patient developed stridor, he was taken up for emergency tracheostomy [Table/Fig-2]. Investigations taken at the time of admission were normal [Table/Fig-3] except for raised CPK levels (50150 U/L), elevated liver enzymes and dark coloured urine.

DISCUSSION
The incidence of Hair dye poisoning has been increasing over the past few years. Suicide (98%) was the most common reason for ingestion, followed by accidental and homicidal [2,4]. Most of the cases consumed the hair dyes orally [4]. Mortality rates in the larger studies varied from 6.8% to 22.48% [1,2,5]. The reasons behind the increasing incidence might be the strict regulations of the sale of other poisonous substances like organophosphorus compounds, which make hair dye a dearer option. Secondly, hair dyes are easily available in the household for the young adults [1] (who constitute a majority of the population affected) whose parents use the hair dye. Thirdly, the hair dye is cheap and easily available in the market. Fourthly, there is availability of information on the Internet, mass
Hair dye poisoning presents a variety of manifestations. Myocarditis is one of the rare complications. Previous studies report a myocarditis incidence of 15% with a high mortality rate of 29% [4]. But the incidence is bound to vary with patients differing in their susceptibility to Paraphenylenediamine, apart from the amount of dye ingested. Singh AP et al., present a case with Right bundle branch block, supraventricular and ventricular ectopics with elevated parameters of myocardial damage and the patient could not be revived [6]. In another case published by Singh N et al., patient developed ST segment elevation and T wave inversion in anterior chest leads with blood concentration rising steadily for the first 24 hours with blood concentration rising steadily for the first 24 hours [3]. Right Bundle Branch Block (RBBB) is a relatively rare (4.0%) Electrocardiographic (ECG) finding in myocarditis [8].

A new onset RBBB in a patient without heart disease is associated with increased future cardiovascular risk and mortality in addition to being associated with increased rate of myocardial infarction and pacemaker implantation [9]. Moreover, this association seems to be stronger in younger patients [9,10]. The Bundle Branch blocks usually remained for months, but in our case, it was transient only [11].

The patient survived the episode of myocarditis in our case as the patient had consumed only 70 ml of hair dye containing approximately 2.8 g of paraphenylenediamine. Studies suggest that myocarditis is a dangerous complication at doses greater than 10 g [4]. Many studies relate the toxicity of the dye with the dose ingested [2,4,12]. A study measuring the plasma level of paraphenylenediamine in hair dressers showed very low levels [13]. Though studies have been done measuring urinary and plasma levels [14], they are usually not measured as individual sensitivity to the dye also varies. Moreover the patient had vomited after consumption of the hair dye, which might have washed out the poison from the stomach, thereby, reducing the exposure. The young age of the patient also favored a good prognosis [9].

The patient presented with signs and symptoms of upper airway edema, but myocarditis manifested only on the 2nd day. This might be related to the biphasic blood clearance of paraphenylenediamine. The half lives recorded in animal studies are 24 minutes and 43.5 hours with blood concentration rising steadily for the first 24 hours recorded in animal studies are 24 minutes and 43.5 hours with blood concentration rising steadily for the first 24 hours [4]. The patient had vomited after consumption of the hair dye, which measured as individual sensitivity to the dye also varies. Moreover the patient had vomited after consumption of the hair dye, which might have washed out the poison from the stomach, thereby, reducing the exposure. The young age of the patient also favored a good prognosis [9].

Our patient was given psychiatric counseling before discharge. For addressing this emerging problem, a dual pronged approach is necessary. First, we need to address the cause and motives behind the hair dye consumption. This may be through 24 hours support services, psychiatric counseling and more research into the reason behind this problem. The patient should be counseled in such a manner that he goes back to his community and propagates the harms of this poisoning, discouraging people from consuming it. Second, we would need to enforce regulations on the sale of hair dye, to reduce access to vulnerable population. Implementing these solutions might help reduce the burden on the family and healthcare system.

REFERENCES


