Myocardial Damage in Hair Dye Poisoning - An Uncommon Presentation

Neelima Singh*, OP Jatav**, RK Gupta*, MK Tailor*

Abstract

A 22 year old female presented to us after consuming hair dye with features of angio-neurotic edema, asphyxia and irregular pulse. Serial ECGs revealed presence of ST segment elevation and T wave inversion in anterior chest leads. Strongly positive c-troponin-T test further confirmed the myocardial damage. This is a rare manifestation of para-phenylene diamine poisoning mentioned in literature. Patient also had elevated liver enzymes and oliguria.

Introduction

Para-phenylene diamine (PPD) is a common ingredient in most of the hair dye preparations. This accelerates the dyeing process and may produce local as well as systemic toxic effects when applied topically and/or ingested.

Early manifestations of oral hair dye (para-phenylene diamine) intake (usually within four to six hours of ingestion) are numbness and burning of mouth, throat and vomiting. Swelling of upper airway and upper GI tract leads to dysphagia and respiratory distress (Angioedema). If patient survives, this acute phase a Late Phase sets in usually after 12 hours of ingestion. It may last from few days to several weeks. Rhabdomyolysis, intravascular haemolysis, oliguria/anuria, acute tubular necrosis/acute renal failure, are delayed complications in some patients who survive late phase. This case report highlights that early cardiac complication may prove fatal, than renal or angioneurotic oedema as usually reported.

Case Report

A 22 year old female presented to emergency after nine hours of ingestion of approximately 10 grams of dissolved hair dye with the complaints of swelling in mouth and neck with breathlessness. She was anxious and dyspnoeic with facial and periorbital puffiness but there was no cyanosis. Her respiratory rate was 30 per minute and examination of chest was normal. Oxygen saturation was maintained at room air. Her pulse was 130/min but irregular and blood pressure was 110/70mm/Hg. Electrocardiogram recorded showed sinus tachycardia with “rSr” pattern in V1 with high take-off ST segment in V3, V4, V5. There were both ventricular and supra-ventricular ectopics; peaked “P” waves were seen in II, III, avf with left QRS axis (Fig. 1). She was monitored and managed supportively. All investigations at the time of admission were normal except strongly positive Troponin -T. X-ray Chest and 2D echocardiography was normal. Clinical status remained same on second day. Progressive rise in SGOT and SGPT (upto 1940 and 2290 IU respectively) were observed. On third day she became hypotensive and pulseless. At this time bilateral basal crepitations appeared in chest. Urine output started declining but blood urea did not rise. On the same evening ventricular...
couplets appeared followed by transient idio-ventricular rhythm. On day fifth the patient succumbed to cardio-respiratory arrest.

**DISCUSSION**

Common features of Para-phenylene diamine poisoning are orofacial oedema, angio-neurotic oedema, rhabdomyolysis, myoglobinuria, acute renal failure, etc.

Clinical manifestations of acute myocarditis with distinct onset vary from asymptomatic to fatal. There are scanty reports of toxic effect of paraphenylenediamine on myocardium.

Increased serum levels of cardiac troponin-T provides evidence of myocyte injury in patients with clinically suspected myocarditis more sensitively than does conventional determination of cardiac enzyme levels.2

Earlier reports of myocarditis induced by PPD showed similar ECG findings along with echocardiographic features of significant ventricular hypokinesia and presence of a thrombus.3

Brahmi et al reported a case of myocarditis with myocardial infarction induced by PPD, which was confirmed by angiography that showed septo-apical hypokinesia due to spasm of the anterior inter-ventricular coronary artery.4

Electrocardiographic features of multiple ventricular and supraventricular ectopics with ST-T changes in our case can be attributed to cardiac myolysis. Positive troponin-T test confirmed the clinical suspicion.

To sum up electrocardiographic features and positive c-troponin T are suggestive of myocarditis in our case and we must be vigilant regarding cardiac manifestations in every case of paraphenylenediamine poisoning. Delayed complication of the poisoning must be watched for at least one month in all cases.

**REFERENCES**


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**Announcement**

**ISHTM 2008**

49th Annual Conference of Indian Society of Hematology & Transfusion Medicine (ISHTM 2008) will be held at Puducherry (Pondicherry) from 19th to 21st September, 2008 (Pre-conference workshop/CME on 18th September, 2008).

For details contact: Prof. Tarun Kumar Dutta, Organising Secretary, ISHTM 2008, Department of Medicine, JIPMER, Puducherry 605 006.

E mail: ishtm2008@gmail.com Website: www.jipmer.edu
Tel (Off) : 0413-2272381 to 90 Extn: 4320/4321 Mobile: 9443602330