



Case Report

CNS Vasculitis Following Hair Dye Poisoning- A Rare Case Report

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ABSTRACT

Hair dye ingestion is one of the common causes of suicidal poisoning in young females. It contains mainly Para-phenylenediamine (PPD), which is very toxic, resulting in high mortality in the form of acute renal failure, myocarditis. We report a case of 21yr old female who developed CNS Vasculitis following hair dye ingestion and expired despite of active treatment.

KEYWORDS: Acute renal failure, Hair dye, Para-phenylenediamine, Poisoning.

INTRODUCTION

The hair dyes commonly available in the market contain a potential toxin by name Para-phenylenediamine (PPD). PPD is metabolized to an active radical to form benzoquinone diamine, which is further oxidized to a trimer known as Brandowaski's base, which causes anaphylaxis and is strongly mutagenic [1]. The patients usually present with severe edema, dysphagia, pain, rigidity of limbs, breathlessness, acute renal failure, and cola colored urine [2].

The poor outcome in these patients is due to late presentation for treatment [3]. The estimated lethal dose of PPD is not known, however patients who consumed up to 10gms of PPD survived [1]. Reports of increased liver enzymes and prolonged bleeding and clotting time [4], unusual complications like laryngeal edema, carpopedal spasm were also reported [5]. The characteristic chocolate brown colored urine could be confirmative evidence of hair dye poisoning with PPD [6]. CNS involvement is extremely rare. We report a case of 21yr old female presented with seizures after 10th day of hair dye ingestion.

CASE REPORT

A 21yr old female presented with seizures, altered sensorium of one day duration. Previously she suffered with vomitings, facial puffiness and pedal edema, fever for five days. There was a history of suicidal attempt with hair dye ingestion 10 days before, following which she had vomitings, which was controlled. The seizures were generalized tonic clonic type.

On clinical examination patient was in altered sensorium, responding to deep painful stimuli. Routine laboratory investigations showed elevated serum creatinine and blood urea levels. CT scan revealed diffuse bilateral hypo attenuation in occipital lobes. Non contrast MRI showed altered signal intensities in bilateral fronto-parieto occipital lobes. The lesions are mildly hypo intense on T1W (fig-1), hyper intense on T2W (fig-2) and FLAIR sequence (fig-3). There was restriction on DWI (fig-4), with no hemorrhages on gradient echo sequence. These findings of diffuse sub cortical white matter ischemic changes are suggestive of vasculitis.

Figure:1 Axial (T1W) image showing diffuse white matter hypo intensities in fronto parietal lobes .

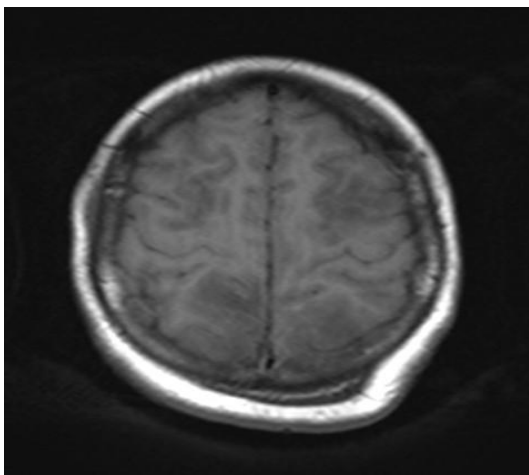


Figure :2 Axial (T2W) image showing diffuse sub cortical white matter hyper intensities in the fronto parietal lobes

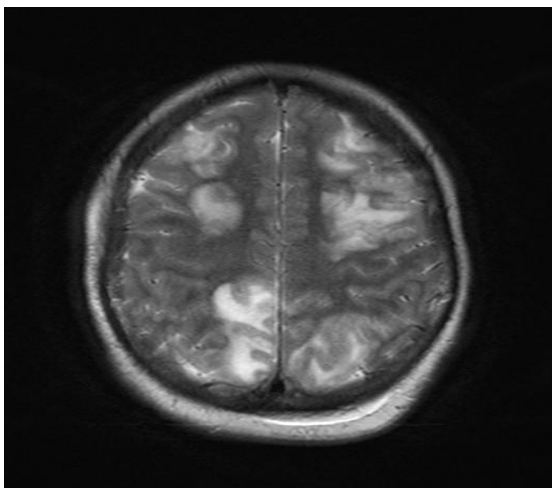


Figure: 3 Axial (FLAIR) image showing bilateral hyper intensities in the occipital lobes.

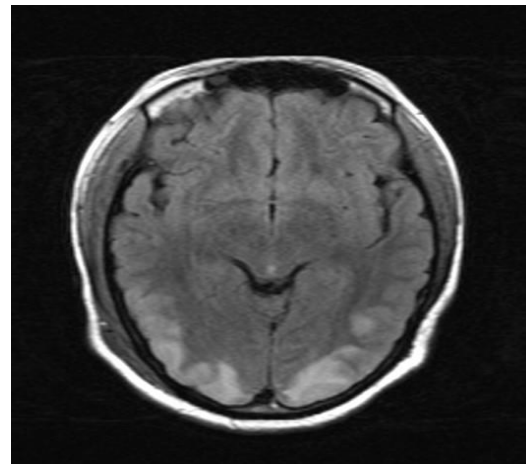
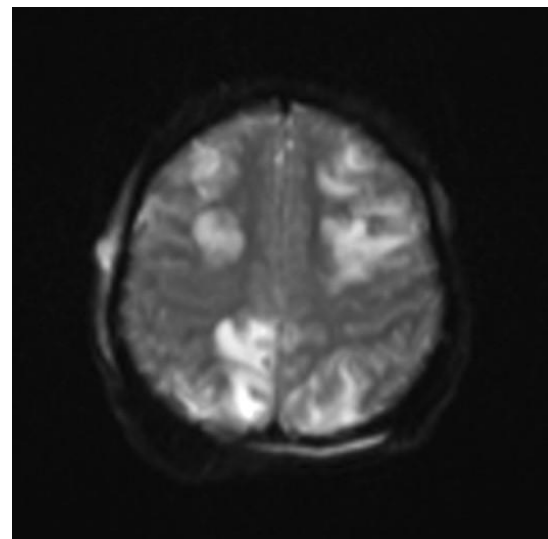


Figure: 4 Axial (DWI)image showing restriction in fronto parietal lobes.



DISCUSSION

Hair dye poisoning is emerging as a frequent agent for suicidal poisoning among young people, which has high mortality and morbidity. The main components of hair dye include PPD (4%), sodium EDTA, resorcinol and liquid paraffin [5]. Hair Dye contamination can occur by respiratory, gastro intestinal or cutaneous routes producing variable spectrum of clinical manifestations ranging from mild conditions like contact dermatitis to severe anaphylactic reactions [7]. Oral ingestion of PPD leads to two types of toxic effects, either angioneurotic edema or severe muscle pain, rhabdomyolysis leading to acute renal failure (ARF). Vomiting, hypotension, hypertension, seizures, myocarditis were also reported [2].

The toxicities of sodium EDTA include hypocalcemia leading to carpopedal spasm. Resorcinol which is corrosive causes methemoglobinemia and renal toxicity [5]. Raised liver enzymes, raised CPK, hypocalcemia, hyper

bilirubinemia are the commonly reported abnormal laboratory investigations [1]. Though serum creatinine remained normal throughout the course, acute renal failure is a reported complication of PPD poisoning [6]. Sachin S Soni in his study on systemic toxicities of para-phenylenediamine reported Acute renal failure in 8 of 10 cases. In his study on the para-phenylenediamine poisoning Sushil Kumar[4] found that PPD was fatal in 18.5% of cases and the common causes being angioneurotic edema, cardiac toxicity, renal failure requiring dialysis. PK Jain and others in their analysis of 1020 cases of hair dye poisoning conclude that patients who consumed up to 10gms of PPD survived if treated within 4 hours.

Severe edema of face and neck, myocarditis and renal failure were poor prognostic factors. A case of myocarditis with myocardial infarction induced by PPD and confirmed by angiography was reported [8]. Yong-Sik reported a case

of status epilepticus following exposure to hair dye, probably due to metabolic encephalopathy with underlying Diabetes mellitus [7].

The other causes of acute onset of altered sensorium with seizures include many conditions like acute disseminated encephalomyelitis, subarachnoid hemorrhage, hemorrhagic infarction, central venous thrombosis. There is no history of preceding viral infection, hypertension or uncontrolled headache. Due to diffuse extent of the disease involving most of the cerebral hemispheres, despite of appropriate, prompt treatment patient succumbed the following day.

CONCLUSION

Being freely available in the market hair dye has become the common culprit for suicidal poisoning. As there is no specific antidote for PPD, hair dye poisoning has to be strongly suspected in young patients with suicidal attempts. Due to its relative mortality and morbidity and extensive public awareness has to be created on the toxicity of the hair dye.

REFERENCES

1. Jain PK, Agarwal N, Kumar P, Sengar NS, Agarwal N, Akhtar A. Hair dye poisoning in Bundelkhand region prospective analysis of hair dye poisoning cases presented in Department of Medicine, MLB Medical College, Jhansi. J Assoc Physicians India 2011;59:415-19.
2. Jain PK, Agarwal N, Kumar P, Sharma Kr A, Akhtar A. Prospective study of ingestional hair dye poisoning in

northern India (Prohina). Journal of clinical medicine and research. Jan 2011;vol.3(1):9-19.

3. Chrispal A, Begum A, Ramya I, Zachariah A. Hair dye poisoning: An emerging problem in the tropics: An experience from a tertiary care hospital in South India. Trop Doct 2010;40:100-3.
4. Dr. Sushil Kumar. Suicide by Para-Phenylenediamine Poisoning. J Indian Acad Forensic Med 2010; 32(2):163-164.
5. P Bhargava, P Mathew. Hair Dye Poisoning. J Assoc Physicians India. December 2007;55:871-72.
6. Garg SK, Tiwari R, Ahlawat A. Hair dye poisoning: An unusual encounter. Indian J Crit Care Med 2014;18(6):402-4.
7. Yong-Sik Jung, Seok-Beom Kwon, Suk Yun Kang, San Jung, and Sung-Hee Hwang. Status Epilepticus Possibly Caused by Hair dye Exposure in diabetic man. J Neurocrit Care 2008;1:168-170.
8. Brahmi N, Kouraichi M, Blel Y, Mourali S, Thabet H, Mechmeche R, Amamou M. Acute myocarditis and Myocardial Infarction induced by paraphenylene diamine interest of angiocoronarography. Int. J. Cardiol. Nov 2006;113:E93-5.

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