CASE REPORT

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Hair dye poisoning is a common problem in West Africa, in North Africa and on the Indian subcontinent. In Morocco, acute hair dye poisoning is the most frequent reason for hospitalisation for attempted suicide. In adults, 70 - 90% of episodes of hair dye poisoning are suicide attempts. The reported mortality rate range for acute hair dye poisoning is 10.6 - 38.7%.

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A previously well 28-year-old woman presented to Groote Schuur Hospital, Cape Town, South Africa, with a history of hair dye ingestion, thus intending to end her life. She had not passed urine for 12 hours, but appeared comfortable. Her face was oedematous, blood pressure 110/80 mmHg, and pulse 80/min, with a clear chest and raised jugular venous pressure. Her arterial blood gas showed a pH of 7.31, an HCO_3^- of 19 mmol/L, a base excess of –6 mmol/L and a lactate level of 0.7 mmol/L. The urine volume and electrolyte levels are shown in Table 1. A diagnosis of acute kidney injury secondary to hair dye poisoning was made. The patient received haemodialysis from day 3 of her hospital stay, and started passing urine on day 8. She was discharged home on day 14 and was followed up at the nephrology outpatient clinic.

Discussion

Hair dye poisoning is a common problem in West Africa, in North Africa and on the Indian subcontinent.[1] In Morocco, acute hair dye poisoning is the most frequent reason for hospitalisation for attempted suicide. In adults, 70 - 90% of episodes of hair dye poisoning are suicide attempts.[1] The reported mortality rate range for acute hair dye poisoning is 10.6 - 38.7%.[1]

Para-phenylenediamine (PPD) is a major ingredient of oxidisable permanent hair dyes. It is a derivative of para-nitroaniline.[1,2] On oxidation, PPD produces Bandrowski's base, which is an allergen and possibly mutagenic. Acute ingestion of PPD causes angioneurotic oedema of the neck and face, often requiring an emergency tracheostomy in children, and anuric or oliguric renal failure with chocolate-brown urine and rhabdomyolysis.[1] Acute renal failure develops in 70.5% of patients and 50% require renal replacement therapy. Hypovolaemia, rhabdomyolysis or direct toxic effects of PPD on the kidneys may cause renal impairment.[3] Chronic and recurrent cutaneous exposure is associated with chronic renal failure and interstitial fibrosis and mesangial expansion on renal biopsy.[4] Spastic paraparesis, hepatic involvement with elevated transaminases and pericarditis in association with acute PPD poisoning have also been reported. There are no diagnostic tests or a specific treatment for PPD (hair dye) poisoning. The history and classic findings of angioneurotic oedema of the face, acute renal failure and chocolate-brown urine usually contribute to the diagnosis. Maintenance of the airway with endotracheal intubation or tracheostomy when necessary and early renal replacement therapy improve mortality outcomes.[1]

PPD is a dangerous poison and is widely available over the counter. It is imperative that one is aware of its clinical manifestations on acute ingestion and that it may potentially cause chronic renal impairment when recurrently applied to unprotected skin.

References

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Table 1. Urine volume and electrolyte levels (U & E)

	Days														
	1	2	3*	4*	5*	6*	7*	8	9*	10	11	12	13	14	18
Urine (mL)	0	0	0	0	0	0	0	150	450	750	900	115	900		
Na^+ (mmol/L)	146	142	140	136		130		136		138			138		
K^+ (mmol/L)	146	142	140	136		130		136		138			138	135	136
Urea (mmol/L)	7.1	10.0	12.3	11.4		8.4		7.6		7.0			4.6	24.0	19.0
Creatinine (mg/dL)	297	639	819	802		764		780		633			506	439	298

* Haemodialysis.