

“Kala Pathar” Poisoning

Mudassir Shafiq, Faran Maqbool, Arshad Iqbal, Haider Zaigham Baqai,
Department of Medicine, District Head Quarters Hospital Rawalpindi

Introduction

In the developing world, suicide was responsible for about 600,000 deaths in the 1990's.¹ It is the third leading cause of death in 15-44 years age group. In the past 50 years, suicide rates have increased to 60%.² The preferred means of suicide is poisoning. Pesticides ingestion or skin exposure is the commonest poisoning in the developing countries. Paraphenylenediamine (PPD) poisoning is emerging as an important way of intentional self harm in many developing countries of Africa and Asia.³ PPD is an active ingredient of 'Kala Pathar'. PPD along with a mixture of other chemicals (Kala Pathar, Paraffin, diamond etc) is the constituent of various hair dyes. PPD exerts its highly toxic effects on the muscular, respiratory, hepatic, renal and cardiac systems by inhibiting cellular oxidation.

Case Report

A 30 year old male, married, labourer by profession presented in emergency department with history of unknown poison ingestion. Attendants were unaware of exact time, quantity and nature of poison taken. He had no previous history of any psychiatric illness or any other premorbid. On receiving in ER, he was tachypneic with unstable vitals. Attendants gave history of dark color urine since night. Gastric lavage was done with activated charcoal after maintaining i.v lines and fluids were given. But his condition was deteriorating and he became more breathless. Airway was maintained with endotracheal intubation and oxygen was attached. Urethral catheter showed dark coloured urine. After continuous effort attendant told that he took “ kalapathar”.

Patient was managed with forced diuresis, soda bicarb, i.v fluids, proton pump inhibitors. At that time he started to maintain vitals. He developed neck and face swelling and body stiffness (rhabdomyolysis) and became more critical. He was shifted to ITC where he was put on ventilatory support. There ECG showed changes that were suggestive of hyperkalemia. This was addressed with calcium gluconate, beta agonist, nebulization and diuretics. At this time renal function tests were markedly deranged suggesting acute renal

failure. Gradually he became comatose. Inotropic support was started. Plan of exchange transfusion and methylene blue intravenous, in next 1-2 hours, was finalized. Labs that were received showed markedly raised total leucocyte count with low hemoglobin levels. Potassium level was raised. ALT was also on higher side (270). Urine routine examination showed blood +++. Patient, eventually succumbed to his illness.

Discussion

p-Phenylenediamine (PPD) is an organic compound with the formula C₆H₄(NH₂)₂. It is derivative of aniline in the form of white solid but turns black on air oxidation.⁴ It is mainly used as a component of engineering polymers and composites. It is also an ingredient in hair dyes. The LD₅₀ of PPD is 0.028 mg/L.⁵ One review published between January 1992 and February 2005 that studied the association between cancer and personal hair dye use as identified through the PubMed search engine found "at least one well-designed study with detailed exposure assessment" that observed associations between multiple myeloma, non-Hodgkin's lymphoma, bladder cancer and acute leukemia and personal hair dye use.⁶ PPD produces local as well as systemic toxic effects when applied topically and/or ingested. When taken by mouth, it is highly toxic and it has dose related outcome. Angioedema leading to dysphasia and respiratory distress, intravascular hemolysis, rhabdomyolysis, hepatic necrosis and acute renal failure, myocarditis and fatal arrhythmias are important clinical manifestations. High mortality rate, 68.8%⁷ and 20%⁸, was observed in local studies. Early recognition and supportive treatment is the mainstay as no antidote is available till date.

To conclude, Paraphenylenediamine (PPD) (Kala Pathar) poisoning, a warning to the Asian countries is emerging as alternative to organophosphate poisoning because of its low cost, easy availability and bitterness. Trial of methylene blue should be given. We recommend public awareness regarding this poison and sale of Kala Pathar should be legally restricted by Government.

References

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