

Case Report

Deliberate Self-harm by Intravenous Injection of Organophosphorus Pesticide: A Case Report

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ABSTRACT

Organophosphorus compound (OPC) pesticide poisoning is a very common form of poisoning in India because of its availability and easy access. Absorption can occur through gastrointestinal tract, skin and respiratory tract. Intramuscular or intravenous route of administration with suicidal intent is rare. Clinical features depend on the amount of the poison consumed, its concentration, the route of administration and the time of instituting therapy.

We are reporting a rare case of intravenous injection of dimethoate (Rogor), which is an OPC pesticide, that was managed in our hospital.

Key Words: Organophosphorus compound; Pesticide; Dimethoate

Introduction

Deliberate self-harm by consumption of organophosphorus compounds (OPCs) is quite common and accounts for up to 50% of ICU admissions in several hospitals in India.¹ Here we report an interesting case of deliberate self-harm by intravenous administration of dimethoate (Rogor), an organophosphorus pesticide. Incidentally, the patient had a suicidal tendency and this was his second attempt at deliberate self-harm with an intravenous OPC. He had multiple, linear, healed scar marks over the left forearm resulting from previous suicidal attempts.

The Case: A 35-year-old male patient was brought to the hospital with a history of deliberate intravenous injection of about 5 ml of dimethoate (Rogor), an organophosphorus pesticide, at around 12.10 pm on 30.07.2011 at his residence. He was treated initially at a primary health centre nearby and was brought to our hospital for further management. There was a history of previous suicidal attempts by multiple incised wounds over left forearm 5 years back. The individual was unmarried with deformed lower limbs, probably due to polio.

On examination, the patient was conscious and oriented, with pulse 120/min, BP 150/100 mm Hg, SPO₂ - 93%. Most of the systems were normal. There was no evidence of any impending acute cholinergic crisis or respiratory failure. Local examination revealed erythema and flushing with slight oedema over the injection site, with needle marks over left cubital fossa (Fig 1) and dorsum of left hand. Multiple, parallel, linear, healed scar marks on the left forearm (Fig 2) were also noted which were suggestive of previous deliberate self-harm, and was confirmed by history.

Baseline evaluation and investigations suggested intravascular haemolysis with macroscopic haematuria and moderately elevated liver enzymes as a result of haemolysis and direct hepatotoxic injury. The patient was managed conservatively with atropine, pralidoxime (PAM)

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and other supportive measures as part of the standard treatment protocol for management of OPC poisoning in our centre. The affected limb was kept elevated and intravenous antibiotics started. The patient improved gradually, the haemolysis settled down, and the urine became normal in colour over a period of time. The affected limb did not require any surgical intervention. The patient was shifted out of the ICU after 72 hours and was discharged on day 5 after psychiatric counselling.



Fig 1 Injection mark with erythema in the left cubital region



Fig 2 Multiple, parallel, linear, healed scar marks over left forearm

Discussion

Acetylcholine acts as a neurotransmitter at both sympathetic and parasympathetic ganglia, and is hydrolyzed into choline and acetic acid by true and pseudocholinesterases. Organophosphorus compounds (OPCs) irreversibly inhibit choline esterase activity, which leads to accumulation of acetylcholine at the synapse. This leads to both nicotinic and muscarinic symptoms such as nausea,

vomiting, excessive salivation, urination, lacrimation, tracheobronchial secretions, skeletal muscle weakness, miosis, bradycardia and hypotension or hypertension. The severity of symptoms depend on the concentration and amount of poison consumed.²⁻⁴

Rogor is a 30% (emulsifiable concentrate) formulation of dimethoate, an OPC pesticide with systemic, contact and acaricidal action (**Fig 3**). It is a relatively safe pesticide and does not have persistent residual effect on the environment.⁵



Fig 3 The organophosphorus pesticide used by patient to inject himself

There are very few case reports of parenteral OPC poisoning in literature. Guven et al⁶ have reported a case of intravenous methamidophos poisoning where in the patient developed features of acute cholinergic crisis within 30 min, but recovered with standard therapy with atropine and pralidoxime. Zoppellari et al⁷ reported a case in which an 80-year-old man injected isofenphos by intramuscular route (in the thigh). He developed cholinergic crisis 5 hours after injection, and the signs and symptoms lasted for 3 weeks probably due to slow release of the OPC into the circulation.

The patient in our case did not develop any muscular weakness due to cholinergic crisis as reported by the above mentioned authors, nor did he develop intermediate syndrome as has been reported earlier in a case report by Badhe & Sudhakar.⁸

In our case, the patient initially passed dark coloured urine consistent with intravascular haemolysis as evidenced by a raised LDH and signs of haemolysis on peripheral blood smear which disappeared on day 2. A similar case report of intravascular haemolysis due to OPC consumption has been reported recently by Ming-Ling Wu & Jou-Fang Deng.⁹

The local reaction in the form of mild erythema, swelling and phlebitis subsided with conservative line of treatment in the form of limb elevation and antibiotics. If not properly managed in the initial stages, such a reaction may lead to abscess formation and cellulitis which may require surgical intervention in the form of incision and drainage, debridement and fasciotomy which have all been described in literature.¹⁰

Conclusion

OPC toxicity by parenteral route is a rare cause of deliberate self-harm sometimes presenting as a diagnostic and management challenge. Onset of symptoms may be delayed and the presentation may be atypical. As decontaminating measures are not applicable, even a small quantity of injection may be fatal. The treating physician should be vigilant, and appropriate treatment has to be administered promptly in the event of suspicion of OPC injection.

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