

Recovery of Organophosphorus Poisoning and Progression to Intermediate Syndrome- A Case Report

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Abstract

Background: Organophosphorus (OP) pesticide poisoning is a major public health concern across Indian population. Its ingestion is associated with high morbidity and mortality. Early recognition and prompt management is important for saving patient's life. Organophosphorus poisoning leads to three main syndromes: a) acute cholinergic syndrome b) intermediate syndrome c) OP induced delayed polyneuropathy. **Case Report:** A 30-year-old female patient presented in emergency after consumption of organophosphorus pesticide. After proper resuscitation she was given atropine and pralidoxime and intubated and shifted to ICU. She was extubated after complete recovery but showed symptoms of muscle weakness and respiratory distress after two days pointing towards intermediate syndrome, an uncommon subacute complication of organophosphorus poisoning. The symptoms resolved with the use of glycopyrrolate and the patient eventually made a complete recovery. **Conclusion:** Intermediate syndrome is characterized by the onset of weakness of neck flexors, proximal limb muscles and respiratory muscles within one to four days after organophosphorus poisoning. Recognition of this syndrome is important as it affects the respiratory system which may require ventilatory support.

Keywords: Organophosphorus poisoning, intermediate syndrome, atropine, pralidoxime, glycopyrrolate.

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Introduction

Organophosphorus pesticide suicidal poisoning is a major public health concern across rural Indian population owing to its easy and cheap availability in these countries. It is of great importance to clinicians due to high morbidity and mortality associated with its ingestion. Early recognition of toxic syndrome and prompt management is key for saving patient's life. Organophosphorus poisoning leads to three main syndromes : a) acute cholinergic syndrome b) intermediate syndrome c) OP induced delayed polyneuropathy.^[1-4] Here we present a case of woman with OP poisoning who progressed to intermediate syndrome.

Case Presentation

A 30-year-old female patient weighing 40 kg was brought to emergency about 4 hours after ingestion of spray insecticide containing chlorpyrifos and cypermethrin, in a suicidal attempt. She presented with vomiting, diarrhoea, urinary incontinence and altered sensorium. She had bilateral miosis, rhypersalivation and bilateral crackles in chest on auscultation. Intravenous line was secured and fluid resuscitation was begun immediately. High flow oxygen was given simultaneously. Gastric lavage was done after the patient stabilized. Bolus of four ampoules of Inj. Atropine i.e. 2.4mg was given intravenously and the dose was doubled every 10 minutes till full atropinisation. Pulse pressure, heart rate, blood pressure, size of pupils, presence of sweat and auscultatory findings were recorded. Inj. Pralidoxime 2 gm was given intravenously into a second cannula over 20 minutes followed with an infusion of 0.5mg/hr in 0.9% Normal saline. Heart rate following atropinisation was 106/min. Blood pressure was 96/54mmHg. However, patient was having copious secretions. She became tachypneic and gradually desaturated to 60%. Inj. midazolam 2mg was given intravenously. After oral suctioning, intubation was immediately done using endotracheal tube of 7mm ID, AMBU bag attached and soon oxygen saturation rose to 96%. After that patient was shifted to intensive care unit on AMBU ventilation with oxygen flow at 8L/min. Patient was sedated using inj. midazolam at 3mg/hr and relaxed using inj. vecuronium at 4mg/hr and kept on controlled mode of ventilation in the intensive care unit. Gastric lavage with 2 litre normal saline was done again in ICU and atropine infusion was started at 1.2 mg/hr and titrated according to chest condition and secretions. Pralidoxime infusion was continued. Patient was continuously assessed for cholinergic features. Inj. ceftriaxone 1gm twice a day was started. Chest physiotherapy was initiated. On day 3, Inj. MgSO₄ 2 gm intravenous was started for two days. Patient condition improved gradually. On day 5, atropine infusion was stopped and pralidoxime infusion was stopped after 12 hours, patient was extubated and put alternatively on noninvasive ventilation and ventimask.

After 2 days, patient again complained of generalized weakness, inability to control her neck and respiratory distress. Patient was reintubated with ETT of ID 7mm. Patient was started on glycopyrrolate 0.4mg twice a day. On the basis of above-mentioned symptoms diagnosis of intermediate syndrome was made. On day 8, serum cholinesterase level was done and it was below 1U/L. Four units of fresh frozen plasma was transfused for three consecutive days. Antibiotics were changed according to culture sensitivity reports. Glycopyrrolate was tapered and finally stopped on day 12. Weaning was started and patient was finally extubated on day 14 and put on ventimask with steam inhalation being done intermittently. Patient maintained on air and finally shifted toward after 15 days of admission.

Discussion

Organophosphate compounds are possibly the most widely used insecticides in the world.

Organophosphorus compound phosphorylate the active site of acetyl cholinesterase enzyme inactivating the enzyme causing accumulation of acetylcholine, which excessively stimulate nicotinic and muscarinic receptors producing widespread clinical symptoms likely nausea, vomiting, diarrhoea, urinary incontinence, blurring of vision, salivation, lacrimation, bronchorrhoea, bradycardia, hypotension, muscle paralysis, fasciculation, confusion, seizure, coma and respiratory failure.^[4,5]

Intermediate syndrome is known as syndrome of muscle paralysis occurring 24-96 hours following exposure after resolution of acute cholinergic syndrome being treated with atropine. Here weakness rapidly affects muscle of head, neck, proximal limb and often muscles of respiration causing ventilation failure. It is believed to result from a persistent excess of acetylcholine at neuromuscular junction.^[6] In our patient muscles of neck, proximal limb and respiratory muscle were involved after two days of complete recovery from acute cholinergic crisis. Glycopyrrolate has high selectivity for peripheral cholinergic sites and is a useful drug in organophosphate intoxication.^[4]

References

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