

## SHORT REPORT

### CLINICAL PROFILE OF INTERMEDIATE SYNDROME IN ORGANOPHOSPHATE POISONING

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**Background:** Organophosphate (OP) poisoning is a major global health problem, causing over 200,000 deaths annually especially in developing countries. In Poison Treatment Center, New Yangon General Hospital, Myanmar, OP poisoning accounts for 14% of total poison admission in 2013, 17% in 2014 and 10.3% in 2015 respectively. So, OP poisoning contributes a significant health problem in Myanmar. Clinical presentations of a typical OP poisoning may follow three well-defined phases. The initial phase is an acute cholinergic crisis, after that Intermediate syndrome (IMS) may develop within 24-96 hours, and lastly organophosphate induced delayed polyneuropathy (OPIDN) may present after 2-3 weeks. The term IMS was first described by Senanayake and Karalliedde in 1987, because it arose in the interval between the end of acute cholinergic crisis and the onset of OPIDN. IMS results from an excess amount of acetylcholine at neuromuscular junction due to prolonged inhibition of acetylcholinesterase. This phenomenon leads to down regulation of the acetylcholine receptor and promotes muscle weakness. (Huang *et al*, 2007) Intermediate syndrome is characterized by weakness of proximal limb muscles, neck flexors, respiratory muscles, and motor cranial nerves. Leon S *et al*. (1996) found that IMS occurred in 20-68% of affected patients between 1965 and 1995.

**Aim:** The aim of this study was to highlight the clinical profile of intermediate syndrome following organophosphate poisoning,

**Methods:** A hospital based cross-sectional descriptive study was carried out on 141 organophosphate poisoning patients admitted to Poison Treatment Center, New Yangon General Hospital during January 2017 to August 2018. First of all, the ingested compound was identified from the history, bottle labels or referral letter. In all patients with clear sensorium, eye movements, power of neck and proximal limb muscles were assessed at least twice a day. In the absence of cholinergic signs, muscle power less than MRC Grade 3 (unable to move against gravity) of flexors of neck, shoulder, and hip with or without respiratory impairment were taken as evidence of intermediate syndrome. Other causes of proximal muscle weakness were excluded by history, examination and laboratory investigations. Patients with features of intermediate syndrome were monitored by assessing respiratory rate, type of respiration and contraction of accessory muscles of respiration clinically.

**Results:** In 141 organophosphate poisoning patients, eighteen patients (12.8%) had features of intermediate syndrome. Chlorpyrifos containing compounds were the commonest compounds involved in intermediate syndrome patients in this study (50%).

All the patients with intermediate syndrome in this study had proximal muscle and neck muscle weakness. Respiratory muscle weakness was the second most common manifestation (77.8%). Most of the patients needed ICU care (88.9%) and required endotracheal intubation and tracheostomy for respiratory muscle weakness. Mortality was 11.8% in this study.

**Conclusion:** The intermediate syndrome which follows organophosphate poisoning still remains a significant problem with its high morbidity and mortality. The findings of this study highlights that the incidence of IMS in organophosphate poisoning should be identified in early stages and careful treatment, monitoring and follow up of affected patients are needed to reduce the demises. Mortality occurred due to respiratory paralysis can be prevented by early recognition of the syndrome and prompt ventilator support. The muscles of respiration are the last to recover and this fact should be borne in mind while weaning the patient from the ventilator.

**Recommendations:** There should be strict rules and regulations about sales of pesticides regarding the easy availability. Proper health education should be given to the public how to cope with stress and not to use poisons for suicide. Proper guidelines and precautions

should be made to handle the pesticide in order to prevent accidental poisoning. In addition, this study defined intermediate syndrome clinically. We can do repetitive nerve stimulation and electromyography which can detect failure of neuromuscular transmission for diagnosis of intermediate syndrome. So, further studies based on RNS and EMG for diagnosis of intermediate syndrome is highly recommended. Assessing predictors and risk factors for intermediate syndrome should also be done in the future studies

#### **Conflict of Interest**

There is no conflict of interest related to this study.

#### **References**

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