



THE AGA KHAN UNIVERSITY

eCommons@AKU

Department of Emergency Medicine

Medical College, Pakistan

August 2012

Prolonged intermediate syndrome due to organophosphate poisoning

Nadeem Ullah Khan

Aga Khan University, nadeemullah.khan@aku.edu

Muhammad Junaid Patel

Aga Khan University

M. N.M. Hifath

Aga Khan University

Saima Kamal

Aga Khan University

Syed Ather Hussain

Aga Khan University

Follow this and additional works at: http://ecommons.aku.edu/pakistan_fhs_mc_emerg_med



Part of the [Chemicals and Drugs Commons](#), [Emergency Medicine Commons](#), and the [Infectious Disease Commons](#)

Recommended Citation

Khan, N., Patel, M. J., Hifath, M. N., Kamal, S., Hussain, S. A. (2012). Prolonged intermediate syndrome due to organophosphate poisoning. *Journal of clinical toxicology*, 2(4), 1-2.

Available at: http://ecommons.aku.edu/pakistan_fhs_mc_emerg_med/91

Prolonged Intermediate Syndrome Due to Organophosphate Poisoning

Nadeem Ullah Khan¹, Muhammad Junaid Patel², M.N.M. Hifath², Saima Kamal², Syed Ather Hussain²

¹Department of Emergency Medicine, Aga Khan University, Karachi, Pakistan

²Department of Medicine, Aga Khan University, Karachi, Pakistan

Abstract

Organophosphate poisoning can present as acute cholinergic syndrome, Intermediate syndrome and delayed neuropathy. Intermediate syndrome secondary to organophosphate poisoning is a serious health problem leading to increased morbidity and mortality. The incidence of problem varies and range from 8%-84% of organophosphate poisoning cases. The factors account for this difference is nature of organophosphate compound, severity of poisoning and inadequate Oxime therapy. The recognition of this syndrome is important as organophosphate poisoning is common in our country. We presented this case of organophosphate poisoning leading to prolonged intermediate syndrome. The muscle weakness associated with this syndrome generally resolves in 5-18 days but in our case this lasted for 23 days. After a prolonged Intensive Care Unit (ICU) stay patient was discharged home with no residual symptoms. The case highlights anticipation and recognition of this problem after cholinergic crisis is over.

Key words: Organophosphate; Poisoning; Intermediate syndrome; Pakistan Prolonged

Introduction

Organophosphate (OP) pesticide contributes significantly to morbidity and mortality related to poisoning in the developing world [1-3]. It generally present initially as acute cholinergic crisis which manifest as excessive salivation, lacrimation, sweating, vomiting, diarrhea, urination, pinpoint pupil, mental status changes and seizures. In some patient after acute cholinergic crisis is over an Intermediate syndrome of muscle weakness develops leading to respiratory failure [1-3]. Some cases have delayed complications like organophosphate induced delayed polyneuropathy and chronic organophosphate induced neuropsychiatric disorder. Most of the deaths occur during acute cholinergic crisis or during Intermediate syndrome of muscle weakness [3-5].

The incidence of Intermediate syndrome reported in literature varies and range from 8% - 84% of cases of organophosphate poisoning [3]. Various factor accounts for this difference, including the nature of OP compound, severity of poisoning and inadequate Oxime therapy etc. [3]. The syndrome occurs after the acute cholinergic crisis is over and patient is clinically improved. It manifests as acute muscle paralysis especially involving neck flexors, proximal muscles, cranial nerve palsy and respiratory muscles and therefore requires ventilator support [6]. Certain OP like parathion, methylparathion, malathion, and fenitoin are commonly associated with this condition [6]. The recognition of this syndrome and its anticipation is important as apparently well patient suddenly develop respiratory failure leading to high morbidity and mortality.

We report a case of a 23 year old female with Organophosphate poisoning who was successfully treated with pralidoxime and atropine, in the acute phase of poisoning but suddenly developed respiratory failure that lasted for twenty three ICU days.

Case Report

A 23 year old young lady brought to the Emergency Department (ED) by family one hour after ingesting a bottle of an unknown insecticide. On arrival, she was having excessive secretion and multiple episodes of vomiting. She had 2 episodes of vomiting while in ED. On examination she was tachycardic and had pinpoint pupils. Patient was suspected to have organophosphate poisoning based on clinical

features. Nasogastric lavage was performed. She was also atropinized and started on pralidoxime. She was admitted to special care unit.

Her symptoms improved within 48 hours of treatment as she was planned to be shifted to general ward prior to discharge when she developed respiratory distress with peripheral cyanosis. Her pulse oximetry revealed hypoxia and she was started on high flow oxygen via facemask. She then developed an episode of Generalized Tonic Clonic seizures during which she was intubated and was shifted to ICU.

On improvement of her GCS in ICU it was noted that she had decreased power in her limbs. On examination she had objective weakness of all limbs (lower limbs greater than upper limbs) and deep tendon reflexes were depressed in upper and lower limbs. Cranial nerves and sensory examination were normal. Toxicology faculty at our institute diagnosed her as a case of Intermediate Syndrome (IMS).

Multiple attempts to extubate the patient failed due to persistent respiratory muscle weakness. She was also having excessive secretions requiring continuous infusion of atropine and pralidoxime. Her Electromyography (EMG) revealed significant decrement on fast frequency Repetitive Nerve Stimulation (RNS) consistent with neuromuscular junction disorder secondary to organophosphate poisoning. MRI brain with contrast and Lumbar puncture were normal. Her seizures were attributed to a recurrence of her childhood epilepsy by the neurologist and it was precipitated by hypoxia due to respiratory failure.

She stayed in ICU for 23 days and required a tracheostomy for successful weaning from ventilator and discharge from hospital. At follow up 6 weeks after discharge, she did not show any residual/recurrence of her symptoms and her tracheostomy was removed.

Corresponding author: Nadeem Ullah Khan, Department of Emergency Medicine, The Aga Khan University, Stadium Road, Karachi-74800, Pakistan, Tel: +92-21-34861149/34864573; Fax: +92-21-34934294; Email: nadeemullah.khan@aku.edu

Received August 02, 2012; **Published** August 19, 2012

Citation: Khan NU, Patel MJ, Hifath MNM, Kamal S, Hussain SA (2012) Prolonged Intermediate Syndrome Due to Organophosphate Poisoning. 2: 229. doi:[10.4172/scientificreports.229](https://doi.org/10.4172/scientificreports.229)

Copyright: © 2012 Khan NU, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Discussion

Our case highlighted a prolonged duration of an intermediate syndrome requiring ICU and ventilator support for about 23 days. According to Goldfrank's toxicological emergencies [6], the muscle weakness, in general, resolves in 5 to 18 days, whereas this lasted longer in our case report. The maximum reported time of resolution in the literature is 30 days [3]. This is a huge burden on already scarce medical resources in the developing country. OP poisoning is common in developing world and regulation of pesticide control is not adequate in our country [2].

We also highlight through this case report that although organophosphate poisoning is common and published literature [2,7-9] is available from our country but we could not find a single case report or case series on this important entity from our country. Studies published on organophosphate poisoning from our country [2,7-9] has described clinical presentation of cholinergic excess, investigation, management and outcome of patient but no description of intermediate syndrome. Although hazardous pesticide is easily available in the market, the entity might be going unrecognized or unpublished. Therefore the risk as well as incidence in our setting is unknown. Recognition of the Intermediate syndrome will help us identify the risk existing in our community and thus will help plan intervention accordingly.

Recognition of signs of muscle weakness before full blown respiratory failure happens is also important. This patient developed shortness of breath initially then cyanosis and then followed by Tonic Clonic seizure. An assessment of muscle weakness at the time of complain of difficulty breathing would help avoid precipitating seizure episode. Another problem is inadequate labeling of pesticide product. The product ingested by patient was sold as pesticide but we could not identify the exact ingredient of the product as there was no labeling.

We generally treat these patients based on clinical finding of cholinergic excess in our setting. Labeling of product will help

anticipating this important cause of morbidity and mortality. Banning of product associated with intermediate syndrome would be another desirable intervention.

Conclusion

Intermediate syndrome contributes to morbidity and mortality. Early recognition will help in prompt ventilator support. We recommend that patient with acute organophosphate poisoning should be assessed for muscle weakness after cholinergic crisis is over to anticipate impending respiratory arrest due to intermediate syndrome.

References

1. Aaron CK (2008) Organophosphate poisoning-induced intermediate syndrome: can electrophysiological changes help predict outcome? *PLoS Medicine* 5: 1017-1018
2. Turabi A, Danyal A, Saud H, Durrani A, Ahmed M (2008) Organophosphate poisoning in the urban population; study conducted at National Poison control Centre, Karachi.
3. Yang CC, Deng JF (2007) Intermediate syndrome following organophosphate insecticide poisoning. *J Chin Med Assoc* 70: 467-472.
4. Jayawardane P, Dawson AH, Weerasinghe V, Karaliedde L, Buckley NA, et al. (2008) The spectrum of intermediate syndrome following acute organophosphate poisoning: a prospective cohort study from Sri Lanka. *PLoS Medicine* 5: 1143-1153.
5. Eddleston M, Mohamed F, Davies JO, Eyer P, Worek F, et al. (2006) Respiratory failure in acute organophosphorus pesticide self-poisoning. *QJM* 99: 513-522.
6. Eddleston M, Clark RF (2011) Insecticides: organic phosphorus compounds and carbamates. In Nelson LS, Lewin NA, Howland MA, Hoffman RS, Goldfrank LR, et al. *Goldfrank's Toxicologic emergencies*. Ninth edition Mc Graw Hill.
7. Jamil H (1990) Acute poisoning-a review of 1900 cases. *JPMA* 40: 131-133.
8. Khurram M, Mahmood N (2008) Deliberate self poisoning- experience at a medical unit. *JPMA* 58: 455-457.
9. Hussain AM, Sultan ST (2005) Organophosphorus insecticide poisoning: management in surgical intensive care unit. *JCPSP* 15:100-102.