



Case Report

Organophosphate Induced Delayed Neuropathy (OPIDN)

P M Basak¹, MM Begum², M J Islam³, FA Khan³,
HS Das⁴, KI Jahan⁵

Abstract

A 13 years old boy who consumed organophosphorous compound later on developed delayed neuropathy is described.

Key Word: organophosphorous, neuropathy

TAJ 2014; 27: No-1: 62-63

Introduction

Organophosphate (OP) poisoning is the most common poisoning in Bangladesh.¹ The acute Cholinergic effects of organophosphates have been well known. However, there are only a few case reports of delayed neuropathy following OP insecticide exposure.

Case Report

A 13 year old boy, admitted into our hospital with the complaints of weakness in the lower limbs and difficulty in walking for 3 weeks. The medical history of patient indicated that three month before the patient ingestion of OPC with the intent to commit suicide. He was then treated conservatively in a local centre and after treatment there was full improvement in the symptom. On neurological Examination there was slight wasting of muscles with decreased muscle tone. Muscle power was 3/5 (according to Medical Research Council muscle strength grading scale). Knee and ankle reflexes were diminished. Plantars were bilaterally silent. The gait analysis exhibited a high-stepping gait accompanied with bilateral

drop foot. Other reflexes i.e. biceps, supinator and triceps were normal in both upper limbs. Cranial nerves were not involved and there was no sensory deficit. Respiratory, cardiovascular and abdominal systems were essentially normal.

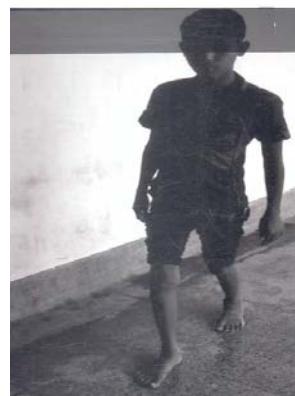


Fig:1

Electrophysiological study are consistent with “Motor axonal polyneuropathy involving Lower limb>Upper limb.” Therefore, keeping in view of history of organophosphate poisoning followed by

¹ Assistant Professor, Department of Medicine, Rajshahi Medical College, Rajshahi.

² Assistant Professor, Department of Pathology, Islami Bank Medical College, Rajshahi.

³ Assistant Registrar, Department of Medicine, Rajshahi Medical College Hospital, Rajshahi.

⁴ Lecturer, Department of Community Medicine Rajshahi Medical College, Rajshahi.

⁵ Lecturer, Department of Biochemistry, Rajshahi Medical College, Rajshahi.

(3 weeks later), signs of motor neuropathy with axonal motor neuropathy pattern on electrophysiology, a diagnosis of organophosphate induced delayed neuropathy was established.

Discussion

Organic insecticides are compounds that have been used globally for pest control for over 100 years. Due to their ready availability and easy accessibility, they have been frequently used as suicidal agents in Bangladesh. Three different type of neurological presentations have been recognized following OP poisoning:

- ❖ Acute cholinergic syndrome
- ❖ The intermediate syndrome
- ❖ Organophosphate-induced delayed polyneuropathy (OPIDN)

Organophosphate-induced delayed polyneuropathy (OPIDN) is a rare complication that usually occurs 2–3 weeks after acute exposure. It is a mixed sensory/motor polyneuropathy, especially affecting long myelinated neurons, and appears to result from inhibition of enzymes other than AChE. It is a feature of poisoning with some Ops such as trichlorocresylphosphate, but is less common with nerve agents. Early clinical features are muscle cramps followed by numbness and paraesthesiae, proceeding to flaccid paralysis of the lower and subsequently the upper limbs. Paralysis of the lower limbs is associated with foot drop and a high-stepping gait, progressing to paraplegia. Paralysis of the arms leads to wrist drop. Sensory loss may also be present but is variable. Initially, tendon reflexes are reduced or lost but mild spasticity may develop later. There is no specific therapy for OPIDN.

Regular physiotherapy may limit deformity caused by muscle-wasting. Recovery is often

incomplete and may be limited to the hands and feet, although substantial functional recovery after 1–2 years may occur, especially in younger patients.

References

1. Jokanović M, Kosanović M, Brkić D, Vukomanović P. Organophosphate induced delayed polyneuropathy in man: an overview. *ClinNeurolNeurosurg* 2011;113:7-10.
2. Jokanović M, Kosanović M. Neurotoxic effects in patients poisoned with organophosphorus pesticides. *Environ ToxicolPharmacol* 2010;29:195-201.
3. Lotti M. The pathogenesis of organophosphate polyneuropathy. *Crit Rev Toxicol* 1991;21:465-87.
4. Jett DA. Neurotoxic pesticides and neurologic effects. *NeurolClin* 2011;29:667-77.
5. Vasconcellos LF, Leite AC, Nascimento OJ. Organophosphate-induced delayed neuropathy: case report. *ArqNeuropsiquiatr* 2002;60:1003-7.
6. Shetye JV, Surkar SM, Karnik ND, Mehta AA. Delayed onset neuropathy along with recurrent laryngeal nerve palsy due to organophosphate poisoning and the role of physiotherapy rehabilitation. *Indian J Crit Care Med* 2014;18:102-4.
7. Thivakaran T, Gamage R, Gunarathne KS, Gooneratne IK. Chlorpyrifos-induced delayed myelopathy and pure motor neuropathy: a case report. *Neurologist* 2012;18:226-8.
8. Jokanovic M, Kozanovic M and Stukalov PV. Organophosphate Induced Delayed Polyneuropathy. *Medicinal Chemistry reviews Online* 2004;1:123-31.
9. Li Y, Dinsdale D, Glynn P. Protein domains, catalytic activity, and subcellular distribution of neuropathy target esterase in Mammalian cells. *J BiolChem* 2003;278:8820-5.
10. Johnson MK. The delayed neuropathy caused by some organophosphorus esters: mechanism and challenge. *CRC Crit Rev Toxicol* 1975;3:289-316.

All corresponds to
Prabir Mohan Basak
Assistant Professor
Dept. of Medicine
RMC
E-mail:prabirbasak84@yahoo.com