

## AN UNUSUAL SOURCE OF POISONING

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### ABSTRACT

**Objective:** To highlight the dangers inherent in the misuse of organophosphates as pesticides in our communities.

**Materials and Methods:** A report of an illustrative incident, seen by the authors.

**Results:** Four male children were poisoned from circumcision wound dressings applied by a traditional medical practitioner. They presented to the Paediatric emergency unit of Jos University Teaching Hospital with signs of organophosphate poisoning and responded well to atropine administration.

**Conclusion:** This incident underlines the need for health workers to be aware of the various ways in which insecticides are used and misused in their locality and the difficulties in diagnosing organophosphate poisoning in our environment.

**KEYWORDS:** *Traditional medical practitioner, circumcision dressings, organophosphate poisoning.*

### INTRODUCTION

The wide spread use of organophosphates as insecticides has led to an appreciable increase in the incidence of poisoning with these agents in the developing world. This is a result of their easy availability, indiscriminate handling and storage, and lack of knowledge about the serious consequences of poisoning. The World Health Organisation estimates that each year, one million suicide attempts involving pesticides occur worldwide<sup>1</sup>.

Organophosphate insecticides are widely used in both agricultural and house pest control in urban as well as rural environments. In Nigeria, it is quite common to see insecticides advertised and sold in small packs at market places as rat control pesticides for the homes. Hence human exposure to these compounds is significant and has resulted in numerous reported incidents of harmful effects<sup>2</sup>. The common route of intoxication in children has been ingestion<sup>3</sup>, although agricultural workers are usually intoxicated through skin contact<sup>4</sup>. In this report, four boys from two families, two from each, poisoned by contact through circumcision dressings, and contaminated by organophosphate insecticides are presented.

### CASE REPORTS

Four boys, (two from each family), aged between five and nine years were circumcised by a traditional medical practitioner. The circumcision wounds were dressed with traditional medicaments, they had no oral medications before, during or after circumcision. Within thirty-six hours of the procedure, they were brought to the hospital with severe diarrhoea and vomiting. The liver function tests were essentially normal throughout the duration of the illness.

Tables 1 and 2 present the clinical features and progression of their illness.

### DISCUSSION

In nearly all countries poisoning remains an important cause of admission to hospital and can occasionally cause severe morbidity<sup>5</sup>. There are four many ways poisoning can occur in childhood. Firstly, through accidental ingestion of a substance, which can be either a drug, household product, a plant or vegetable or some other substance which the child has obtained. Secondly, children can deliberately take poison usually medicine, but these self-poisoning episodes are much more common in older and teenage children. The third way comprises children who are deliberately poisoned by their parents as a form of non-accidental injury. The final category is those children who receive accidental overdose of therapeutic medicine. These can be termed therapeutic "mishap"<sup>5</sup>.

This case report is, mainly concerned with the last category "Therapeutic mishap". Here were four boys, two from each family, presenting with signs and symptoms of organophosphate poisoning, after being circumcised by a traditional medical practitioner.

Organophosphates are compounds that are soluble in lipids and organic solvents. They are absorbed through the intact skin or by inhalation and their ingestion is mainly due to contamination of foodstuffs.

They are characteristically inhibitors of acetyl cholinesterase, the enzyme that hydrolyses acetylcholine released in the synapses during transmission of nerve impulses and pseudocholinesterase in the liver. Hydrolysis of the nerve transmitter makes it possible for the synapses to transmit another, subsequent stimulus. By blocking the enzyme acetylcholine

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*Table 1: Progression of Illness of First Set of Patients*

Days	An. Id. 7 years	Uz. Id. 5 years
Day 1 (about 8 am)	Circumcised	Circumcised
2 hours later	Onset of diarrhoea and vomiting	Onset of diarrhoea and vomiting
6.05 pm	Brought to hospital dehydrated.  Rehydrated and placed on antibiotics and immunized with tetanus toxoid	Brought to hospital dehydrated  Rehydrated and placed on antibiotics and immunized with tetanus toxoid
Day 2	Started having generalised convulsions Atropinised and started on anti-convulsants Circumcision dressing changed	Developed severe respiratory distress Bilateral pulmonary crepitations Atropinised and given oxygen Circumcision dressing changed.
Day 3	Confused	Improved. Mild respiratory distress and started feeding.
Day 4	Stopped having diarrhoea and vomiting, still having convulsions.	No more respiratory symptoms and signs.
Day 5	Still having convulsions	Uneventful.
Day 6	Stopped having jerky movements Anti-convulsants discontinued	Uneventful.
Day 7	Discharged home	Discharged home

*Table 2: Progression of Illness of Second Set of Patients*

Days	Ab. Mo. 9 years	Ah. Mo. 6 years
Day 1	Circumcised	Circumcised
20 minutes later	Onset of diarrhoea and vomiting	Onset of diarrhoea and vomiting
Day 2	Brought to hospital severely dehydrated. Had contracted pupils which reacted sluggishly to light.  Rehydrated and atropinised. Placed on antibiotics and immunized with tetanus toxoid Circumcision dressing changed	Brought to hospital severely dehydrated Had contracted pupils which reacted sluggishly to light.  Rehydrated and atropinised. Placed on antibiotics and immunized with tetanus toxoid Circumcision dressing changed.
Day 3	Stopped having diarrhoea and vomiting. Started feeding.	Stopped having diarrhoea and vomiting. Started feeding.
Day 4	Uneventful.	Uneventful.
Day 7	Discharged home	Discharged home

accumulates at all the autonomic ganglia, at the post ganglionic parasympathetic nerve endings and the skeletal neuromuscular junction, resulting in excessive cholinergic activity<sup>6,7</sup>.

Therein lies the explanation for the classical clinical picture of organophosphate poisoning. Which at first may comprise headache, weakness and mental confusion, soon to be surmounted by more pathognomonic reactions such as vomiting, profuse sweating, hypersalivation, bradycardia and colicky abdominal pains. Muscle twitching or fasciculation may progress to frank convulsions, while dyspnoea is exacerbated, by bronchoconstriction and excessive bronchial secretions. Diarrhoea, tenesmus and urinary incontinence are a prelude to collapse, coma and death from respiratory arrest. Pupillary constriction is the outcome of the postganglionic parasympathetic over-action in the nerves to the eye<sup>6</sup>.

The interval between exposure and the onset of clinical symptoms may be anything from a few minutes to several hours. A variety of symptoms may occur, and their severity and sequence depend on many factors (e.g. the clinical substance, dose, solvent, route of absorption). In severe cases a life-threatening situation may develop within 15 minutes<sup>4</sup>.

Organophosphate poisoning was not suspected in the first set of patients on presentation. The next day on review of the patients, with the development of new symptoms, coupled with the admission of the second set of patients who had contracted pupils which reacted sluggishly to light, and attended by the same traditional medical practitioner, organophosphate poisoning was suspected. The source of the poisoning was suspected to be from circumcision dressing, since they had no other medication, topical or oral, or food before or after the circumcision.

Most of the clinical features observed in these patients were similar to those observed in previous reports of organophosphate poisoning<sup>2,4,8</sup>, and the response to atropine in these patients were striking.

Though it was very difficult to obtain information from the traditional medical practitioner on the constitution of his wound dressings, there are reports in some localities where insecticides particularly malathion are applied to the skin to treat lice infestations, scabies and dandruff. We believe strongly that the dressings were either contaminated by organophosphates or the container in which the traditional medical practitioner prepared

his dressings was used to carry the pesticide.

This report highlights the need for Health workers to be aware of the various ways in which insecticides are used and misused in their locality.

Although, the diagnosis of poisoning, with an organophosphate compound, can be confirmed by determining plasma and red blood cell cholinesterase activity<sup>9</sup> and isolating the compound. Treatment should never be deferred when there is a high suspicion (based on the clinical signs and symptoms) especially in the developing countries where facilities may not be available for confirmation.

## REFERENCES

1. **Jeyartnam J.** Acute Pesticide Poisoning: a major global problem. *World Health Stat. Q.* 1990; 43: 139-44.
2. **Ecobichon DJ.** Organophosphorus ester insecticides. Ecobichon DJ, Joy RM. (ed.) *Pesticides and neurological disease.* Boca ration: CRC Press 1982; 151-203.
3. **Zwiener RJ, Ginbury CM.** Organophosphates and carbamate poisoning in infants and children. *Perdiatr.* 1988; 81: 121-6.
4. **Schier E, Petros S, Yecunnoamlack T.** Organophosphate poisoning diagnosis and treatment. *Trop. Doc.* 1990; 20: 89-90.
5. **Craft AW.** Accidental Poisoning in Children. In *Annales Nestle* (ed) *Acute Poisoning in Children* 1990; 48(1): 1-11.
6. **Goulding R.** Pesticides. In *Poisoning Blackwell Scientific Publications* 1983; 121-137.
7. **Higa J, Croce P, Curci O.** Childhood poisoning in less developed countries: An overview from the countries of the Rio de la Plata basin. In *Annales Nestle* (ed). *Acute poisoning in children* 1990; 48(1): 12-24.
8. **Tsao TC, Juang YC, Lan RS, Shieh WB, Lee CH.** Respiratory failure of acute organophosphate and carbamate poisoning. *Chest* 1990; 98: 631-6.
9. **Coye MJ, Batnett PG, Midtling JE et al.** Clinical confirmation of organophosphate poisoning by serial cholinesterase activity. *Arch. Int. Med.* 1987; 147: 437-42.