

Carbamate Insecticide Poisoning

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Introduction

INSECTICIDES are widely used in this agricultural state of Kelantan where Tobacco is being grown extensively. The common insecticides available are organophosphorous compounds (e.g. Malathion), chlorinated hydrocarbons (e.g. Endrin) and Carbamate (e.g. Temik). In the last two years (1974-1975) we have had 7 children admitted to the Paediatric Department with anticholinesterase insecticide poisoning and one child was brought dead to the Casualty Department. All the seven children admitted were successfully treated and were sent home and followed up.

Modes of Accidental Poisoning:

- 1) The first two patients were fed with insecticide accidentally by the mother who mixed up the bottle of Antepar which she took from the Peripheral Clinic. One child died before reaching the Casualty Department.
- 2) Three children took 'nisan' a home made toffee with coconut scraping prepared by the elder girl who accidentally added insecticide to the toffee as flavouring agent.
- 3) Father prepared rice from container contaminated with insecticide used for tobacco plant. Father and son were admitted for poisoning.
- 4) The other two cases are presented in detail.

CASE REPORT

Case 1

A seven month old Malay female was admitted to Paediatric Department with history of sister having administered insecticide powder used for

rose plants at 1 p.m. Patient then became drowsy and slightly blue around the mouth when mother breast fed the child. On admission to the ward at 2.40 p.m. patient had pin-point pupils, muscle twitching, excessive secretions and spontaneous evacuation of bladder and bowels. Apex Beat 140 per min., respiratory rate 36 per min., temperature 99.4°F, B.P. 90/60 mm hg., cardiovascular system – normal, respiratory system – vesicular breath sounds, abdomen – exaggerated bowel sounds. Nasogastric tube was passed and stomach contents aspirated and bowel wash was done. I.V. 1/5 Saline with Dextrose Water was set up and a provisional diagnosis of anticholinesterase insecticide poisoning was made. Injection Atropine (4 ampules each 0.6 mg) was administered till pupils were dilated and patient was transferred to I.C.U. Pupils were re-examined and found to be constricted and a further 7 ampules were administered till pupils were dilated. At 5.15 p.m. patient developed fits (probably due to Hypoxia) and a further 2 ampules of Atropine administered till pupils dilated. Injection Diazepam 2 mg I.V. (Valium) was given to control the fits.

As the patient was cyanosed, she was intubated and put on IPPR. By 6.50 p.m., it was confirmed the insecticide was Temik, a carbamate. From then Atropine was administered at intervals of 10-20 mins till 6.50 a.m. following day using pupils as indicator and patient consumed 167 ampules. Patient was weaned off the respirator and extubated at 9.00 a.m. the next day. Patient was covered with antibiotics. Child recovered uneventfully and was discharged on the 6th day.

Case 2:

A nine year old Malay female was admitted to the Paediatric Department at 6.00 p.m. with history of vomiting twice in the morning at 7.00 a.m. and also complained of giddiness. At about 12 noon, she complained of giddiness following which she became unconscious. No history of fever, fit or diarrhoea. The previous day, the child retired to bed perfectly normal in a relative's house at a tobacco farm.

Patient was investigated for coma because no proper history was available. Investigations were sent and patient was reviewed again at 9.00 p.m.

On examination she had a peculiar odour from the hair and mouth. Pupils were pin point and patient was in Coma IV. Apex Beat 120/per min, regular. B.P. 130/60 mm hg, Respiratory Rate 44 per min. Frothing from the mouth, twitching of muscles all over the body and patient spontaneously opened the bowels and the bladder. Cardio vascular system - normal. Respiratory system - crepts medium to coarse with transmitted sounds. Abdomen - bowel sounds exaggerated. C.N.S. - Coma IV, pin point pupils. Jerks both sides elicited. Plantars were flexor.

Investigations:

Hb 13.2 gms, TW 17,200 per cu. mm, DC P91, L6, M2, E1, Platelet count 450,000 cu. mm. BF/MP - negative. PCV 41%. Blood Urea 40 mg %, RBS 184 mg %. Serum Electrolytes, Sodium 136 mEq. Potassium 4.2 mEq. Chloride 100 mEq. CSF - clear and colourless, Sugar 136 mg%, Total Protein 30 mg%, Globulin - negative, Direct smear - no organisms. Culture - no growth.

Treatment:

Provisional diagnosis of anticholinesterase drug poisoning was made. Nine ampules of (0.16 mg per ampule) Atropine was given I.V. until pupils were dilated. Mouth secretions and lung findings disappeared in 15 minutes. Patient was transferred to I.C.U. At 9.05 p.m. pupils were pin point again and 5 ampules of Atropine were given till pupils were dilated. Patient was administered 2 ampules I.V. Atropine every 10-20 minutes using pupils as indicator till 2.00 p.m. the next day. Patient recovered uneventfully and was discharged on the 7th day. She was given a total of 104 ampules of Atropine.

Discussion:

All seven patients admitted to the Paediatric Department were accidental poisoning and NONE SUICIDAL. Children below 10 years are admitted

to the Children's Ward and the youngest child was 7 months old. Mode of poisoning in Case 2 was interesting because this child with her friend applied carbamate insecticide to the scalp as treatment for HEAD LOUSE. Her friend washed her hands before dinner whereas she did not. This history was elicited from the grandmother around midnight and confirmed by the child later. It is known that malathion ½% in alcohol is used for delousing (BMJ 1975) but how the Kampong folks started to use insecticide for Head Louse is not known.

Atropine was used successfully in all cases without any problem using pupils as index. In the two cases presented, the 7 months old baby consumed 105.6 mg and the 9 year-old 62.4 mg of Atropine. In the treatment of anti-cholinesterase poisoning heroic doses of Atropine have to be used (Goodman & Gillman 1970).

Cholinesterase activity estimation was not done in any of the patients because it is not available locally and diagnosis does not depend on it. (Prof. Ganendran).

The two patients presented were confirmed as Carbamate poisoning. In case 1, it was Temik, an insecticide used for rose plants. For Temik (2 methyl 2 propionaldehyde 0 (methyl carbamoyl) oxine) the antidote as suggested on the container is Atropine only. 2 PAM and other cholinesterase inhibitors are contraindicated. Even in Organophosphorous poisoning 2 PAM should be considered only after Atropine. 2 PAM is also of no value after 24 hours of poisoning and certainly not beyond 48 hours (Mitchell R. Zavon 1974). The value of 2 PAM in all organophosphorous insecticide poisoning is doubted. Other drugs contraindicated in treatment are opiates and other cholinesterase inhibitors.

The Most Commonly Used Carbamate Insecticides (Mitchell R. Zavon 1974)

Aldicarb (Temik^R)
Aminocarb (Matacil^R)
Aprocarb (Baygon^R)
Carbaryl (Sevin^R)
Methomyl (Lannate^R, Nudrin^R)
Zectran^R

Summary:

Signs of poisoning which were useful in diagnosis were 1) pinpoint pupil 2) excessive secretions 3) generalised muscle twitching 4) spontaneous evacuation of bowels and bladder, which were all due to Parasympathetic over activity.

Two cases of Carbamate poisoning are described. The antidote is Atropine.

Tobacco farming is common in the East Coast States and as this insecticide is commonly used, carbamate poisoning should always be thought of in cases of suspected poisoning.

Acknowledgements:

Consultant Paediatrician, Dr. S. Balakrishnan, MBBS, MRCP, DCH., for his guidance. Mrs. Nancy Chan for typing the manuscript and the Anaesthetist Dr. Radhakrishnan, M.B.B.S. (S'pore),

F.F.A.R.C.S. (I), & F.F.A.R.C.S. (Eng.), the Paediatric and I.C.U. Staff.

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