

Cypermethrin Poisoning and Anti-cholinergic Medication- A Case Report

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ABSTRACT: A 30 years old male was brought to emergency department of Manipal Teaching Hospital, Pokhara, Nepal with alleged history of consumption of pyrethroid compound 'cypermethrin'. It was found to be newer insecticide poisoning reported in Nepal. We reported this case to show effectiveness of anti-cholinergic like hyoscine and chlorpheniramine maleate in the treatment of cypermethrin poisoning.

KEY WORDS: Cypermethrin, Pyrethroid, Insecticide, Poisoning.

INTRODUCTION:

Lethal and potent poisonous insecticides killing cockroach and other insects in the kitchen are easily available over the counter to the public worldwide. In recent times, incidence of consumption of these commonly used household insecticides has increased dramatically for suicidal attempts in the developing countries like Nepal and India¹. These are mainly synthetic pyrethroids similar to chrysanthemum plant derived natural pyrethrins. Acute human poisoning from exposure is rare. They are usually non absorbable from the intestine or skin so they were previously used as anthelmintic and pediculocides². Here we are presenting an uncommon case of poisoning with cockroach killer pyrethroid, cypermethrin.

CASE REPORT:

A 30-year-old male has been presented in a drowsy state to emergency department of a teaching hospital in Nepal with a history of vomiting, epigastric pain, lacrimation, sweating and drooling. There was no history of convulsion or diarrhea and no past history of mental derangement or similar suicidal attempt. The accompanying girl friend gave a thrilling history of ingestion of 50 ml of "Super-Cyprin" having a concentration of 25% of cypermethrin which is equivalent to 12.5 gm of poison (**Fig 1**).



Fig 1: Insecticide Agent

General examination revealed injected eyes with normal pupillary size and reaction to light. The lips and buccal mucosa were red and swollen. Vital and systemic examinations were unremarkable. There was no fasciculation or tremor. His liver function and renal function tests, SpO₂, hemogram and serum electrolytes and glucose were normal. Chest radiograph and electrocardiogram were normal. A mixture of activated charcoal (initially 100gm and later 50gm) and water was given with the help of a nasogastric tube. We observed him and gave symptomatic treatment. He also received hyoscine butyl bromide and chlorpheniramine maleate. His recovery was uneventful. Before discharge he was given psychiatric consultation.

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DISCUSSION:

Insecticides like organophosphorus and organochlorine compounds are commonly used poisons owing to easy availability. Cypermethrin ingestion with suicidal intent is a newer insecticide poisoning reported in Nepal. Out of 18 synthetic pyrethroids available, few are used as insecticides and pediculocides. Among the pyrethroid compounds, deltamethrin and cypermethrin are often used in the form of miraculous *Chinese chalk* stick, [locally named as *Lakshman rekha*], powder and liquid to ward off the kitchen insects. Besides the main ingredient pyrethroids, these insecticides also contain a surfactant, Triton-X and an additive, Piperonyl butoxide which prolong its action by inhibiting the oxidizing enzymes³. This pyrethroid kills the insects by paralyzing the nervous system, blocks the inhibitory pathway and disrupts the voltage gated chloride channels on the cell membrane⁴. Mammals are protected by metabolizing and excreting it rapidly.

The toxic oral dose is greater than 100-1000mg/kg body weight and lethal dose is 1-10 gm⁵. The acute toxicity of the cis-isomer in the rat LD50 160-300 mg/kg body weight is much higher than that of the trans-isomer LD50 > 2000 mg/kg. LD50 values differ considerably among animal species depending on the vehicle used and the cis-trans-isomeric ratios used, although the toxic responses in all species were found to be similar⁶.

The insecticidal concentration is 2.5% of deltamethrin and 10% of the cypermethrin. Toxicity to humans are type I hypersensitivity reaction like anaphylaxis or irritant action to the exposed mouth, lips, eyes or skin. ECG may demonstrate ST-T changes, sinus tachycardia, and ventricular premature beats.⁷ But if it is ingested in large doses (200-500 ml of concentrated solution) it may produce neurotoxicity like, tremor, fasciculation, convulsion, coma and even respiratory failure⁸. It also causes increased salivation, upper gastrointestinal bleeding, and rarely renal failure. Occasional death has been reported with deltamethrin or cypermethrin poisoning. WHO guidelines recommend no specific antidotes but symptomatic and supportive measures for this type of poisons⁹. Nevertheless, our patient received hyoscine butyl bromide for nonspecific abdominal pain and chlorpheniramine maleate for his increased salivation and red irritating eyes which subsided eventually. However, UK National Poison Information Service had advised

atropine for increased salivation in deltamethrin poisoning¹⁰.

We suggest further studies to establish the beneficial effect of using hyoscine and chlorpheniramine maleate in the treatment of cypermethrine poisoning.

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