ORIGINAL RESEARCH PAPER

Paediatrics

CASE REPORT ON ACCIDENTAL CARBOFURAN POISONING FROM OVER-THE-COUNTER PEDICULICIDE IN A TODDLER

KEY WORDS: Carbofuran, Carbamate, Acetylcholinesterase, Cholinesterase Inhibitors

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ABSTRACT

Background: Carbofuran, a carbamate insecticide, is widely used in agriculture but occasionally misused as an over-the-counter lice killer in rural India. Accidental ingestion can cause life-threatening cholinergic toxicity in children. **Case Presentation:** We report a case of accidental carbofuran ingestion in a 1.5-year-old female presenting with altered sensorium, pinpoint pupils, and circulatory collapse, managed successfully with prompt supportive care and mechanical ventilation. **Conclusion:** Easy access and improper repurposing of agricultural insecticides as domestic pediculicides pose serious risks to children. Strict regulation and parental education are essential to prevent such toxic exposures.

INTRODUCTION

Carbofuran is an ISO-approved common name for 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate, a broad-spectrum N-methyl-carbamate insecticide and nematicide that inhibits acetylcholinesterase (AChE) in nervous tissue similar to organophosphates [1]. Exposure to carbofuran can lead to nausea, vomiting, abdominal pain, sweating, blurred vision, muscle twitching, and respiratory failure [2]. Although its agricultural use has declined globally, carbofuran remains available in several developing regions, including India, often sold without adequate labeling or warnings [3]. Misuse as an over-the-counter lice-killing powder has been increasingly reported, leading to accidental poisoning in children [4].

Case Report

Patient Information

A 1.5-year-old female child from a nearby village of a district place in Maharashtra, was brought by her parents with a history of accidental ingestion of a powder used for lice killing, approximately 2–3 hours prior to arrival. The ingested quantity was unknown, and the unlabeled powder was brought to the hospital. The child had one episode of vomiting following ingestion. No history of seizures or diarrhea was reported.

Clinical Findings

On admission, the patient was drowsy (GCS 9/15) with pinpoint pupils, cold extremities, tachycardia (HR 190/min), and RR 24/min. Oxygen saturation was 96% on room air. Random blood sugar was 96 mg/dL. The patient weighed 7.7 kg.

Diagnostic Assessment

Laboratory investigations were as follows:

Parameter	Result	Parameter	Result
Hemoglobin	11.2 g/dL	pH	7.4
Total Leukocyte Count (TLC)	14,100 /mm³	pCO_2	31.6 mmHg
Differential Count (P/L/M/E)	56 / 40 / 3 / 2	pO_2	383.2 mmHg
Platelets	4.6 lakh/mm³	HCO_3-	20.1 mmol/L
Blood Urea	16 mg/dL	Sodium (Na^+)	157 mmol/L
Serum Creatinine	0.2 mg/dL	Potassium (K^+)	3.75 mmol/L
Ionized Calcium (iCa^{2+})	1.39 mmol/L	Chloride (Cl^-)	108.6 mmol/L

Therapeutic Intervention

The child was managed with propped-up positioning and IV fluid bolus (20 mL/kg), followed by maintenance fluids. She was intubated and mechanically ventilated due to poor GCS, with inotropic support using noradrenaline for shock. Gradual improvement in sensorium and hemodynamics was noted. The patient was extubated on Day 2, transitioned to oxygen via nasal prongs, and weaned off inotropes. Oral feeds were resumed, and IV fluids discontinued.

Outcome and Follow-Up

The patient was discharged on Day 4, hemodynamically stable and neurologically normal. Parents were counseled about safe storage and disposal of household chemicals.

DISCUSSION

Carbofuran is a highly toxic Class Ib pesticide, with an estimated oral LD_{50} of 8 mg/kg in mammals [5]. Its mechanism involves reversible acetylcholinesterase inhibition, causing accumulation of acetylcholine and overstimulation of muscarinic and nicotinic receptors [6]. Children are particularly vulnerable to carbamate poisoning due to lower body weight, exploratory behavior, and inadvertent ingestion [7]. Unlike organophosphate compounds, carbamate-induced AChE inhibition is reversible and shorter in duration, leading to faster recovery if prompt supportive management is provided [8]. In rural India, unregulated sale of agricultural chemicals as domestic lice killers contributes to preventable pediatric toxicities [9]. Regulatory authorities and public

health campaigns must target awareness, labeling, and restriction of carbofuran in domestic use.

CONCLUSION

This case highlights an alarming trend of repurposed agricultural toxins as household pediculicides. Pediatricians should maintain a high index of suspicion for carbamate poisoning in cases of unexplained cholinergic symptoms. Community education, strict enforcement of pesticide regulations, and clear labeling are critical preventive measures.

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