

Camphor Poisoning –A Cause of Seizure: Case Report

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Abstract: Camphor was originally obtained by distillation of the bark from the camphor tree, *Cinnamomum camphora*. Today, it is produced synthetically from turpentine oil. Camphor has been used topically to relieve pain, and treat warts, cold sores, hemorrhoids and osteoarthritis and is a common ingredient in a wide variety of over-the-counter topical products. Neurotoxicity in the form of seizures can occur soon after ingestion. Isolated cases of camphor-induced seizures have been reported in young children after gastrointestinal, dermal, and inhalation exposure. We report a case of camphor poisoning who experienced an episode of generalized tonic clonic seizure and respiratory failure.

Keywords: Camphor, Neurotoxicity, respiratory failure

INTRODUCTION

Camphor is a pleasant smelling cyclic ketone of the hydroaromatic terpene group. It has been shown to be safe when used topically in low concentrations for short periods of time. Concentrations ranging from 0.1 to 11% seem to be safe for short-term topical use on intact skin [1, 2]. However, camphor is likely unsafe when used topically on broken or injured skin, as it can result in systemic absorption and toxicity [1]. Seizures are a known complication of camphor toxicity and are reported after ingestion, inhalation, and dermal exposure [3, 4]. Currently, many camphor-containing products are imported from other countries and sold without proper or complete labeling. Such products are widely available in the community and are being used for medicinal, spiritual, and aromatic purposes as well as for pest control (Fig. 1 & 2). Because of their wide usage, inadvertent exposure of young children and infants to camphor may represent an under-recognized cause of seizures.



Fig. 1: Camphor blocks used for pooja



Fig. 2: Camphor in massage oil used for musculoskeletal pain

CASE REPORT

A 4 year-old girl was brought to the hospital with history of two episodes of afebrile generalized tonic seizures within a span of 1hour. On arrival in the hospital she was conscious but drowsy, afebrile, and her vital signs were stable. She had no focal neurological signs and her systemic examination was essentially normal. She vomited once in the hospital soon after admission. The vomitus had a strong odour of camphor and contained a few white particulate materials. On questioning, parents told that approximately 2 hours before the onset of seizure they had gone to a temple for pooja where the child was playing with a small camphor tablet which she might have ingested. After 2 hours of admission she had one more episode generalized tonic-clonic seizure that was treated with 0.1 mg/kg of lorazepam intravenously. Followed by this

she became unconscious with GCS of 4 with respiratory failure. She was intubated and put on ventilator. After 3 days of ventilator support she improved and extubated from ventilator. She was under observation for 3 days in the hospital and managed symptomatically. She remained asymptomatic and was discharged.

Routine hematological and biochemical parameters including blood sugar, serum electrolytes, and serum calcium were within normal limits. Electroencephalography record was normal.

DISCUSSION

Common substances containing camphor are vicks vaporub, vicks Inhaler etc. Camphor can easily cross the skin, the mucous membranes, and the placental barrier, and it can cause significant hepatoneurotoxicity [5-7]. Ingestion of even small doses of camphor can cause fatal poisoning in small children [8]. In fact, most reported cases of toxicity occur in the context of unintentional ingestions of rubefacients or when a parent mistakenly administers camphorated oil instead of castor oil [9]. Although most exposures were not treated in a health care facility, there were reports of both moderate and major toxicity. Children are particularly vulnerable to toxicity, because camphor is highly lipophilic and is easily absorbed through the skin and mucous membranes. The site of action of camphor is supposed to be intra-neuronal and on the oxidation cycle at a phase above the flavoprotein cytochrome-b level of the cytochrome oxidase system. This has been supported by postmortem changes of severe anoxia in the neurons [10]. Symptoms of camphor toxicity occur rapidly (as early as 5-15 min after ingestion) and include nausea and vomiting, oral and intestinal burning, and a feeling of warmth and headache. These symptoms may progress to confusion, vertigo, excitement, restlessness, delirium, hallucinations, tremors, and/or convulsions. Other adverse effects that may occur after oral ingestion include tachycardia, visual disturbances, urinary retention, albuminuria and elevations of liver enzymes. The final stage of toxicity often results in depression and sometimes coma. Death can occur from respiratory failure or status epilepticus [11-12].

There is no antidote for camphor toxicity and treatment is largely supportive, involving airway management and seizure control. Seizures in adults and children can usually be managed with the use of benzodiazepines and/or barbiturates. Ipecac syrup should be avoided because of the risk of aspiration. Although there is no clear evidence of efficacy, gastric lavage and/or activated charcoal have been used.

CONCLUSION

Camphor is easily available and is also present in many cold medications and rubefacients. Parents and

also individuals caring for children need to be educated on the proper storage of potentially toxic substances, including both prescription and over-the-counter products. In addition, healthcare providers should be aware of the many products on the market that contain camphor for preventing camphor poisoning.

REFERENCES

1. Allen LV, Kroon LA; Handbook of Nonprescription Drugs. 12th edition, Washington, DC, APhA Publications, 2000.
2. Cohen M, Wolfe R, Mai T, Lewis D; A randomized, double blind, placebo controlled trial of a topical cream containing glucosamine sulfate, chondroitin sulfate, and camphor for osteoarthritis of the knee. *J Rheumatol.*, 2003; 30(11): 523-528.
3. Bronstein AC, Spyker DA, Cantilena LR Jr, Green J, Rumack BH, Heard SE; 2006 annual report of the American Association of Poison Control Centers' National Poison Data System (NPDS). *Clin Toxicol (Phila)*, 2007; 45(8): 815-917.
4. Ruha AM, Graeme KA, Field A; Late seizure following ingestion of Vicks VapoRub. *Acad Emerg Med.*, 2003; 10(6): 691.
5. Siegel E, Wason S; Camphor toxicity. *Pediatr Clin North Am.*, 1986; 33: 375-379.
6. American Academy of Pediatrics; Camphor: who needs it? *Pediatrics*, 1978; 62(3): 404-406.
7. Skoglund RR, Ware LL Jr, Schanberger JE; Prolonged seizures due to contact inhalation exposure to camphor: A case report. *Clin Pediatr.*, 1977; 16(10): 901-902.
8. Smith AG, Margolis G; Camphor poisoning. anatomical and pharmacologic study; report of a fatal case; experimental investigation of protective action of barbiturate. *Am J Pathol.*, 1954; 30(5): 857-867.
9. Matteucci MJ; One pill can kill: assessing the potential for fatal poisonings in children. *Pediatr Ann.*, 2005; 34: 964e968.
10. Bridge CK; Hazards of camphorated oil. *CMAJ*, 1995; 153(7): 881.
11. Smith AG, Margolis G; Camphor poisoning: anatomical and pharmacologic study; report of a fatal case; experimental investigation of protective action of barbiturate. *Am J Pathol.*, 1954; 30: 857e869.
12. Ellenhorn MJ; Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning. 2nd edition, Baltimore, Williams & Wilkins, 1997.