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**Case Report**

# Camphor oil intoxication inducing seizures in a pediatric patient: a case report

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## ABSTRACT

Camphor, a cyclic ketone belonging to the hydroaromatic terpene group, is frequently used in both prescription and non-prescription topical products for its antitussive, analgesic, anesthetic and antipruritic effect. Although widely available as a household remedy, camphor can be highly toxic–particularly in children-even in small doses. Toxicity often presents as neurotoxic effect such as seizures, which may occur shortly after ingestion. Camphor oil, especially when unheated or uncooked, poses a significant risk when ingested or absorbed through the skin. In pediatric patient, ingestion of as little as 3-5 ml of 20% camphor oil or more than 30 mg/kg can be potentially lethal. We report the case of an 8-year-old girl who experienced a generalized convulsion approximately ten minutes after ingesting a homemade remedy prepared with camphor oil and crushed garlic gloves. The mixture was given by her father as a treatment for pinworm infestation, after following advice found in TikTok video. Following ingestion, the child became unresponsive to both verbal and physical stimuli, eye-rolling, and two jerking movements. This was accompanied by tongue biting and cyanosis of the lips. The seizure lasted 15-20 minutes of unresponsiveness before she arrived at the hospital. This case highlights the severe risks associated with camphor poisoning especially among children. It emphasizes the importance of seeking medical treatment from licensed healthcare professionals and avoiding the use of unverified home remedies, particularly those recommended through social media platforms.

**Keywords:** Camphor oil, Seizures, Intoxication, Pediatric, Toxicity, TikTok

## INTRODUCTION

Camphor (*Cinnamomum camphora*) is an organic compound classified as a terpene, commonly found in topical products such as creams, ointments and lotions. The oil is derived from the wood of camphor trees and extracted through steam distillation.

It is frequently applied to the skin to alleviate pain, itching, irritation and inflammatory conditions. Additionally, camphor can be used to ease chest congestion. Despite its potential toxicity-particularly the risk of refractory seizures with overdose-camphor containing products are still widely available and used in both medical and cosmetic applications.

### *Mechanism of action*

Camphor exerts its effects through interaction with transient receptor potential channels, particularly TRPV3, which are cation channels that detect thermal and nociceptive stimuli. By binding to cysteine residues in the pore region ofTRPV3, camphor causes channel activation, resulting in increased intracellular calcium levels and heat-induced hyperalgesia. It also activates TRPV1 and a TRPV1-like current in dorsal root ganglion (DRG) neurons, while simultaneously inhibiting the TRPA1 channel-a receptor involved in temperature sensing-commonly expressed in nociceptive DRG neurons. Although the exact contribution of TRPA1 inhibition to camphor's analgesic effects remains unclear,

repeated exposure to camphor is known to desensitize TRPV1 and TRPV3 channels. This desensitization reduces their response to stimuli, potentially explaining camphor's pain-relieving properties. Furthermore, camphor activates TRPM8 (transient receptor potential melastatin 8), a cold-sensitive receptor, enhancing cold-induced calcium influx and producing a cooling sensation when applied topically. It has also been observed to inhibit TRPM8 activation by menthol.

***Pharmacokinetics***

Camphor is highly lipophilic, allowing efficient absorption through the skin and mucous membranes—particularly in infants. Gastrointestinal absorption is rapid, with toxic effects appearing within 5 to 20 minutes and peaking at around 90 minutes. Its volume of distribution ranges from 2 to 4 L/kg, with approximately 61% protein binding. In adult volunteers, the half-life of camphor has been reported to range between 90 and 170 minutes.

***Toxicity***

*Toxic dose*

Experts recommend urgent medical evaluation for children exposed to doses greater than 30 mg/kg. Seizures are generally not expected at doses below 10 mg/kg.

*Ingested toxic dose*

Case studies suggest that ingestion of approximately 500 mg (equivalent to 30–50 mg/kg) may be toxic. This corresponds roughly to 5 ml (one swallow) of 10% topical camphor or 10 ml (two swallows) of 5% topical camphor.

*Severe toxicity and fatality*

Fatal outcomes such as refractory seizures or respiratory failure have been reported with doses ranging from 780 mg up to over 1 gram (>60 mg/kg).

*Topical toxicity*

Though less common than ingestion, significant toxicity from topical application has been documented-particularly in infants-after extensive use of camphor-containing oils or ointments. For example, severe toxicity occurred in a 4-month-old infant after applying unlabeled camphor oil, and in a 3-year-old child after prolonged exposure to a camphor-based ointment for 10 hours.

## CASE REPORT

An 8-year-old female presented to the emergency department with a history of generalized tonic seizures. The child had received a solution of camphor and garlic oil which had been advised by her father for the treatment of pinworms. The child had no significant past medical history, and her developmental milestones were appropriate for her age. On arrival to the emergency department, she was afebrile, and alert with no signs of trauma. During observation, she developed generalized tonic-clonic seizures, which required rectal diazepam. The seizure aborted after administration.

The child's blood glucose was normal, and there were no signs of hypoxia. The patient was promptly given intravenous fluids and antiepileptic therapy (rectal diazepam) to control the seizures.

After receiving rectal diazepam, no further seizures occurred, but the girl began to have diarrhea, along with decreased urine output. Her borderline serum creatinine level necessitated additional intravenous fluid infusion.

The level of serum camphor was not checked, but the ingested amount was presumed to be significant, given the severity of the neurological symptoms.

For further seizures, lasting longer than 5 minutes, we considered administering another dose of diazepam, followed by a loading dose levetiracetam at 20 to 40 mg/kg, as it is renally excreted and does not require hepatic metabolism. The next day, the father decided to take the child home against medical advice. The child was discharged in good condition.

***Diagnostic workup***

The patient underwent a series of investigations to assess the severity of camphor toxicity. Serum electrolytes were normal. Minerals were normal. Liver and renal function tests were done and it was normal. CT head scan was not done since cause was drug intoxication. Level of camphor oil not done due technical issues. ECG was also normal.

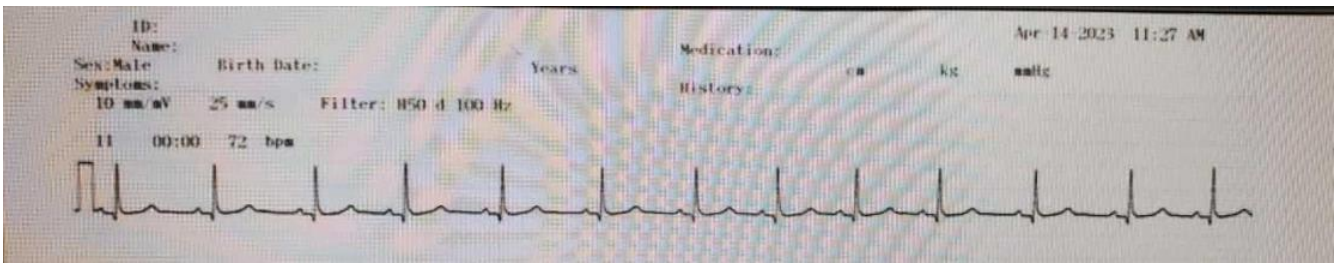


**Figure 1: Normal ECG excluding QTc prolongation as a possible cause of seizures.**

## DISCUSSION

This case underscores the potential dangers of using camphor as a home remedy, particularly in young children. In the presented scenario, an 8-year-old girl experienced seizures shortly after consuming a homemade concoction of garlic oil and camphor-an alternative treatment intended to cure intestinal pinworms, as suggested by her father.

While camphor remains a commonly used substance in various cultural practices for its supposed medicinal benefits, it is important to recognize that it can be extremely toxic. Even very small doses are capable of producing severe adverse reactions, including seizures, as evidenced in this incident.

Camphor toxicity primarily impacts the central nervous system. The onset of symptoms such as seizures can occur rapidly—often within minutes following ingestion. Research indicates that toxic effects may develop at doses as low as 5 to 10 milligrams per kilogram of body weight, making children particularly vulnerable. In this specific case, the absence of other underlying medical conditions and the clear correlation between ingestion and symptom onset led to the strong clinical suspicion that camphor was the causative agent.

Upon arrival at the emergency department, the child was treated promptly with rectal diazepam to halt the seizures. Subsequently, she was prescribed levetiracetam to manage and prevent further seizures. This medication is often considered a safe option for pediatric patients, particularly because it is eliminated from the body primarily through the kidneys, rather than the liver, making it a suitable choice in children.

Diagnosing camphor poisoning, however, poses a significant challenge, largely due to the fact that blood levels of camphor are rarely tested in clinical settings—especially in emergency situations. In this case, the exact quantity of camphor consumed could not be confirmed because blood level testing was not performed due to technical limitations.

Nevertheless, the well-documented history of ingestion and the patient's clinical presentation strongly supported the diagnosis of camphor toxicity. It is important to highlight that despite the dangers, many products containing camphor oil-such as balms and vapor rubs-remain readily available over the counter and are frequently used in many households. This case brings to light a larger public health issue: the ongoing reliance on traditional remedies that often have not undergone thorough scientific evaluation or regulatory approval.

While the cultural and familial value placed on natural or home-based treatments is acknowledged and respected, there is also a pressing need to ensure families are informed of the real risks these substances can pose-especially to children. Unfortunately, the patient's family made the decision to discharge her against medical advice before the healthcare team could complete observation and provide full education regarding the dangers of camphor use. At the time of discharge, the child was medically stable and had not experienced further seizures.

This case serves as a valuable reminder of the importance of medical guidance when treating children, and the potential risks associated with unverified traditional remedies.

## CONCLUSION

Camphor poisoning is a cause of serious disease in children. Patients or parents, like in our case, are strongly recommended to seek medical information/advice and prescriptions solely from licensed healthcare professionals and authoritative resources, as opposed to relying on potentially misleading information disseminated through social media. Professionals should be alert to the signs of toxicity and counsel families about the risks of home remedies. More public health efforts are needed to educate communities and limit access to dangerous products that offer no proven benefit, especially when safer alternatives are available

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