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CASE REPORT

Eucalyptus oil poisoning in children

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Abstract:
We are reporting 2 cases of accidental eucalyptus oil ingestion presenting with status epilepticus. Both the cases presented to our hospital casualty actively convulsing within half hour of eucalyptus oil consumption. As there is no specific antidote for eucalyptus oil, the cases were managed with appropriate supportive treatment. The extreme toxicity of eucalyptus oil poisoning is being emphasized. To the best of our knowledge there are no reports of children presenting with status epilepticus following eucalyptus oil poisoning from India.

Keywords: *eucalyptus oil, status epilepticus, convulsions, gastric lavage*
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Introduction

Eucalyptus oil is a traditional remedy for a variety of common ailments, particularly of respiratory tract. It is cheap, freely available and found in many households. However its extreme toxicity is generally not appreciated and reports of poisoning are rare from developing countries like ours, where people still use eucalyptus oil as a house hold remedy for common cold and cough. We report 2 cases of accidental eucalyptus oil poisoning in children, which were nearly fatal.

Case 1: An apparently normal 2y old female child presented to our casualty actively convulsing with the history of accidental ingestion of eucalyptus oil around 5-10ml. Immediately following the ingestion of the oil the child had two episodes of vomiting and within 20 minutes started throwing generalized tonic clonic convulsions (GTCS). The convulsions continued well beyond half a hour (30 mins) inspite of administering anticonvulsant drugs. It progressed to status epilepticus. The child at admission was in altered sensorium with a GCS score of 8/15, vitals were stable. There was no previous history or family history of seizures in the child. Gastric lavage was withheld as it is contraindicated in eucalyptus oil poisoning (volatile liquid, risk of aspiration pneumonia). The seizures were controlled with two anticonvulsants and one dose of mannitol. There was no fever at any point of the hospital stay or even before the admission. Febrile seizure was ruled out. Chest x-ray done on admission was normal. Other relevant investigations done total counts, renal functions, liver function tests were within normal limits. The child remained in altered sensorium even after 24 hrs. CT, EEG done, were normal. Child had ataxia after 48hrs of treatment which settled down in the next 48hrs. Child improved with conservative management by 72hrs. The child was discharged and on follow up was found to be normal with no neurological deficits. The anticonvulsants were tapered off and presently off medications. The repeat EEG done after six months is normal.

Case 2: A 2y 7months old male child was brought convulsing to our casualty. The child was having cold from past 2 days. The mother gave 5ml of eucalyptus oil to the child as a home remedy for cold following which the child started having generalized tonic clonic convulsions within in 10mins. However there was no family history or previous history of seizures in the child. At admission the child was in altered sensorium with a GCS of 8/15, vitals were stable. There was no fever before or after admission. Febrile seizure was ruled out. The child was treated with anticonvulsants. Gastric lavage was withheld. Relevant investigations including cranial CT scan, EEG were normal. Child improved within 48hrs and discharged home. On follow up the child is found to be normal for his developmental age with no neurological deficits.

Discussion

Eucalyptus oil is a colorless to pale yellow liquid oil (a volatile hydrocarbon), with a camphoraceous odor. It has a pungent, spicy, cooling taste. It is insoluble in water, miscible in alcohol (70%), oils, fats, ether, chloroform, glacial acetic acid. Used as a decongestant and expectorant for cold and cough, applied as a rubifacient in herbal medicine. Used as a cleaning solvent and an antiseptic. Dose recommended in adults orally 0.05ml -0.2ml [1]. Used as a rubifacient 0.5% -3%. Not recommended in children. Fatal dose is 4-5 ml. Death is definite at 30ml . [2]. In children 3-5ml of 100% eucalyptus oil is sufficient to cause fatal complications.

It is rapidly absorbed from the gastrointestinal tract. It is lipid soluble and absorption is enhanced in the presence of milk. Inhalation of the liquid is directly toxic to the lungs, however there is no data suggesting systemic absorption via lungs. It is excreted via the lungs, urine, and skin. Cellular mode of action is not known. Target organs involved are central nervous system, respiratory system and gastrointestinal system. Toxic effects are rapid in onset and extensive. Poisoning affects the CNS in the form of loss of consciousness, hypoventilation, depression of reflexes, convulsions within 10 minutes of ingestion. Vertigo and ataxia may be indicative of mild form of ingestion. More severe forms present with stupor and coma. Coma may last for few hours to 3 days. Convulsions are rare in adults but prominent in children [3]. Gastrointestinal symptoms such as vomiting, pain abdomen and diarrhea are the initial manifestations. Vomiting may be delayed for nearly 4 hrs [4]. The patient may vomit while drowsy and aspirate. Aspiration may cause pnuemonitis. Bronchospasm, pulmonary edema, irregular shallow respiration are well known complications. It may result in respiratory depression. Tachycardia, hypotension and cardiovascular collapse can occur with severe intoxication. Nephritis is well know with doses above 30ml [5]. Muscle weakness and fatigue, paresis / paralysis has been reported. Deep tendon reflexes may be diminished or absent. Pupils may be pinpoint and active or remain dilated and fixed. Topical exposure causes itching and redness which may leave behind a maculopapular rash.

Cases of eucalyptus oil poisoning in children and infants with significant morbidity have been reported from UK and Australia [1,6,7]. Ingestion of eucalyptus oil caused significant morbidity in infants and young children. Significant depression of conscious state should be anticipated after ingestion of 5 mL or more of 100% oil. Minor depression of consciousness may occur after 2-3 mL.

It is mainly supportive and symptomatic [8]. There is no specific antidote for eucalyptus oil poisoning. The main risk is aspiration following vomiting and CNS depression. Hence aggressive gastric decontamination should not be attempted without securing the airway with a cuffed endotracheal tube. Emesis is contraindicated. In severe intoxication doses >30ml, peritoneal dialysis and haemodialysis is of value [8]. Gastric lavage may be done and activated charcoal instilled after securing the airway under general anesthesia [9]. However ,the role of catharsis is not assessed adequately.

The best option for treating mild to moderate poisoning is close observation. Asymptomatic patients should be observed for atleast 6 hrs. A chest X-ray is mandatory at admission, if normal may be repeated after 6hrs of ingestion. Inspite of its use in herbal medicine as a mild decongestant, the toxic effects of eucalyptus oil should be borne in mind especially in children. Parents and health care givers using herbal medicine for common ailments should be cognizant of its complications.

Safety and preventive advices to the parents and general public includes stressing on the health risks of eucalypticus oil and advocating avoiding use of eucalyptus oil as a therapeutic agent; use of resistant closures; discouraging vaporiser use for respiratory infections among young children; dissemination of protocols for treatment of suspected ingestion among health professionals.

Conclusions: Reported cases emphasize the risk of severe toxicity in children following ingestion of eucalyptus. Severe toxicity in children may predispose to the development of status epilepticus. Educating the public on

health risks and advocating avoidance of inappropriate therapeutic usage prevents eucalyptus oil poisoning.

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