

Acute Systemic Toxicity Associated with Ingestion of Juniper Tar

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Abstract

Juniper Tar has been utilized in traditional folk medicine to treat various ailments. Despite its historical use, documented cases are scarce regarding the potential complications associated with Juniper Tar, some of which have been fatal. A 62-year-old male patient with no previous medical history presented to the emergency department complaining of confusion and respiratory distress after drinking a glass of Juniper Tar approximately four hours ago. The patient, who experienced multiple seizures and cardiac arrest at the emergency department, was discharged after an 11-day intensive care unit monitoring period. We present this case to raise awareness among emergency physicians about Juniper Tar, which is widely used for various purposes in folk medicine and cosmetics but can cause poisoning due to its content of essential oils, triterpenes, and phenols. This is a case of cardiac arrest and status epilepticus associated with juniper tar poisoning.

Keywords: Juniper tar; toxicity; emergency department

Introduction

Juniper Tar, a dark-colored and highly aromatic liquid and also called “cade oil,” is derived from the dry distillation of the wood and branches of the *Juniperus oxycedrus* (1, 2). It has been utilized in traditional folk medicine to treat a range of ailments, including hyperglycemia, obesity, tuberculosis, bronchitis, pneumonia, kidney stones, and the management of various dermatological conditions (3). Despite its historical use, there is a scarcity of documented cases regarding the potential complications associated with Juniper Tar, some of which have been fatal (4-8). Considering the widespread availability of Juniper Tar in Mediterranean countries, it is essential to emphasize the need for increased awareness among emergency physicians regarding its toxic effects. We report a case of acute systemic toxicity and cardiac arrest associated with Juniper Tar ingestion.

Case Report

A 62-year-old man with no significant medical history presented to the emergency department (ED) approximately four hours after ingesting a cup of Juniper Tar procured from

a local herbal vendor. The patient exhibited confusion and respiratory distress.

On arrival, his blood pressure was 130/70 mmHg, heart rate was 101 beats per minute, temperature was 36°C, respirations were 28 breaths per minute and a pulse oximetry of 99% on room air. Initial assessment revealed an unconscious patient with equally reactive pupils. The remainder of the physical examination was unremarkable.

The parameters of the biochemistry, hemogram, arterial blood gas, infection screening tests, and culture results studied at the time of the patient’s arrival are presented in Table 1. Other laboratory testing including urine drug screen (consisted of amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, methadone, opiates, tramadol and phencyclidine) and ethanol levels were undetectable. His electrocardiogram revealed sinus tachycardia and troponin, and chest X-ray also were unremarkable. Symptomatic and supportive treatment was initiated.

Approximately 15 minutes after his arrival, the patient experienced a 5-minute generalized tonic-clonic seizure, and was administered 5 mg of intravenous diazepam. Head computed tomography without contrast was performed, which did not show any acute hemorrhage or mass. Following the seizure, the patient did not regain

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Table 1: Laboratory, imaging and culture results of the patient

Tests	Results
Fingerstick Glucose	166 mg/dL
Sodium	137 mEq/L
Potassium	3.5 mEq/L
Chloride	104 mEq/L
BUN	28.4 mg/dL
Creatinine	1.21 mg/dL
White blood cell count	10.6 x 10 ³ /μL
Hemoglobin	14.6 g/dL
Total creatinine kinase	Within normal range
pH	7.24
PaCO ₂	64 mmHg
HCO ₃	21.5 mEq/L
fMetHb	0.5
Lactate	3.6 mMol/L
C-reactive protein	Negative
Procalcitonin	Negative
Urine Culture	Negative
Blood Culture	Negative
Cerebrospinal fluid Culture	Negative
Urine Drug Screen	Undetectable
Ethanol Level	Undetectable
Troponin	Within normal limits
Urinalysis	Unremarkable
Chest X-ray	Unremarkable

consciousness and experienced another generalized tonic-clonic seizure, leading to a cardiac arrest. Cardiopulmonary resuscitation was performed, and the patient was intubated and sedated with midazolam infusion. After intubation, the arterial blood gas results showed a pH of 6.98, lactate level of 12.7, pCO₂ of 85.6, and HCO₃ of 14.1. The patient developed hypotension, tachycardia, and shock.

The patient was discussed with the National Poison Information Center, and systemic poisoning related to Juniper Tar-induced phenol toxicity was suspected. In addition to symptomatic treatments, the patient received N-acetylcysteine therapy, mechanical ventilation, hemodynamic support, correction of acid-base disturbances, and anticonvulsant treatment with levetiracetam.

The patient was admitted to the intensive care unit and empirical antibiotics were initiated. Severe gingival erosions were observed during follow-up examinations. Generalized seizures and respiratory distress persisted in the intensive care unit. Neurology consultation was obtained, and a brain MRI was performed, which did not reveal any acute processes. The patient was successfully extubated after seven days and ultimately discharged on the 11th day, with no sequelae observed during a 6-month clinical visit follow-up period.

Discussion

Juniper Tar, commonly used in alternative medicine, especially in Mediterranean countries, contains etheric oils, triptene (raisin cadinene), and phenols (guaiaicol and cresol derivatives) (9). Phenol, the most toxic component, causes systemic poisoning symptoms when it is converted into free radicals exceeding hepatic conjugation capacity (7, 8). Juniper Tar, which is mostly produced and sold without prescription by local herbalists, is used orally and percutaneously, and it leads to a wide range of reported clinical manifestations such as urticaria, nausea, vomiting, dizziness, and itching to more severe conditions including acute respiratory distress syndrome (4), acute pancreatitis (6), coma (5), and multiorgan failure (7). There have been reported cases in the literature, mostly involving infants aged 0-1, where serious poisonings caused by topical applications were observed.

The management of Juniper Tar toxicity is not well-defined. Treatment may include skin decontamination, supportive care, correction of hemodynamics, treatment of acid-base imbalances, and administration of anticonvulsants. Hemodialysis is essential in cases of anuric renal failure. N-acetylcysteine may be recommended to prevent the accumulation of free radicals due to hepatic biotransformation and to bind toxic metabolites. If methemoglobinemia develops, methylene blue can be administered (6).

The use of herbal products remains popular among the public, increasing the likelihood of emergency physicians encountering problems related to this use. Physicians, especially in regions where traditional medicine is widely practiced, should be aware of this reality. During history-taking, routine questioning should include herbal product usage alongside prescribed medications. The main challenge is the lack of standardized documentation regarding appropriate indications, dosages, side effects, and specific age groups for herbal use. Therefore, it is essential for physicians to contribute to the pool of data and report phytopharmacovigilance to obtain information about possible adverse effects.

Conclusion

Further research and investigation are needed to comprehensively explore the potential toxic effects and complications associated with Juniper Tar. By expanding the existing literature and disseminating this information among medical practitioners, we can facilitate a safer and more informed approach to the use of Juniper Tar in both traditional and contemporary healthcare settings.

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