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A child with bradycardia and hypotension related to mad honey intoxication

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Summary

Mad honey poisoning is a well known condition in the Black Sea Region of Turkey. The cause of the poisoning is the toxin known as grayanotoxin found in honey obtained from the nectar of *Rhododendron ponticum* species growing naturally on the mountains in the region. Here in we presented a 15-year-old boy was brought to the emergency department with weakness and dizziness due to bradycardia and hypotension after eating mad honey. *(Turk Arch Ped 2013; 48: 53-54)*

Key words: Child, intoxication, mad honey

Introduction

It is known that grayanatoxin is formed in the honey produced from the nectar of Rhododendron ponticum which grows in the mountains of the Black Sea region in Turkey, Japan, Nepal, Brasil and in some regions of North America. (1). Grayanotoxin is responsible of the intoxication of the plant named as "bitter honey" by the local community. The mechanism of action of grayanotoxin is related with obstruction of the sodium channels which are responsible of voltage-dependent activation and inactivation in the cellular membrane (2,3). Although mad honey intoxication is not well known outside Turkey, it has been well defined with its wide-spectrum clinical findings causing life-threatening bradicardia, decreased blood pressure, respiratory depression and status change in intelligence. Here, a child who developed bradicardia and severely decreased blood pressure as a result of mad honey intoxication was presented. As far as we know, no pediatric case of mad honey intoxication has been reported in the literature.

Case

A 15-year-old patient presented to our hospital with complaints of sudden dizziness and malaise. It was learned that he ate a large amount of mad honey (150 ml) two hours before. He had no history of cardiac disease, trauma or consuming of any drug. On physical examination performed in the emergency department, the body weight was found to be 65 kg (>97th percentile), the blood pressure was found be 75/50 mmHg and the pulse was found to be 45/min. Electrocardiography (ECG) revealed sinusal rythym and a pulse of 45/min (Picture 1). The laboratory findings were as follows: urea: 21.4 mg/dL, creatinine: 0.9 mg/dL, sodium: 140 mmol/L, chloride: 104 mmol/L, potassium: 4.2 mmol/L, blood glucose: 85 mg/dL, alanine aminotransferase: 30 U/L, aspartate aminotransferase: 25 U/L, creatinine kinase: 120 U/L, creatinine kinase-MB: 6 U/L. Complete blood count and lung graphy were found to be normal. After administration of 400 mL/m^2 isotonic fluid and intravenous 0.5 mg atropin injection (two doses with an interval of ten minutes) the blood pressure became 120/80 mmHg and the heart rate became 73/min. The complaints, hemodynamic status and pathological ECG findings of the patient improved in one hour. The patient who was followed up in the coronary intensive care unit was discharged one day later.

Discussion

Grayanotoxin binds to the sodium channels in the cellular membrane. As a result of this the permeability of the sodium channels increases, the entrance of sodium into the cell

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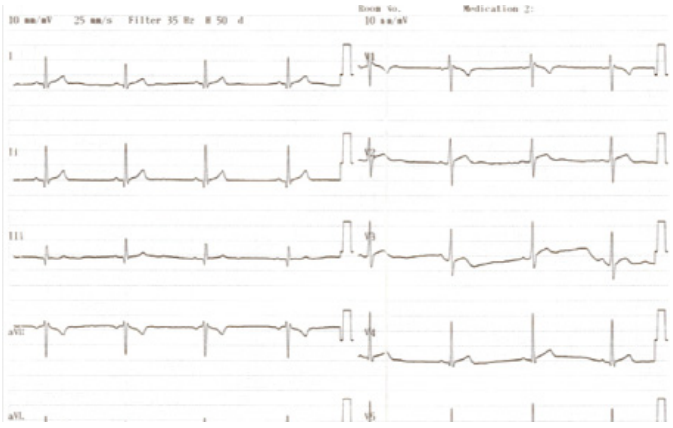

Picture 1. Electrocardiogram of the patient showing marked bradicardia at presentation

increases and repolarization stops. The cellular membrane is maintained in depolarization. The action potential gets weaker with increased entrance of sodium into the cell especially in the sinoatrial node (2). In the study performed by Onat et al. (4), it was proved that the cardiac and respiratory disorders occured with the affection of the central nervous system and bradycardia developed as a result of stimulation of the peripheral vagal nerve.

The symptoms of mad honey intoxication are related with the amount consumed. Generally, intoxication symptoms including dizziness, malaise, excessive sweating, nausea and vomiting develop after consumption of mad honey. The dose which causes intoxication is not known. Other signs include decreased blood pressure, shock, bradyaryhthmia, sinusal bradycardia, nodal rythym, Wolf-Parkinson-White syndrome and complete AV block (5). While dizziness, decreased blood pressure and bradycardia are observed with low doses, defect in consciousness, seizures and complete heart block develop with high doses. A test which measures the blood level of grayanotoxin is not known yet. Supportive treatment is adequate in mad honey intoxication and intoxication is rarely fatal. Generally, it lasts shorter than 24 hours. Cardiac disorders are the main findings of this intoxication. Onat et al.(1) showed that atropin sulphate which is a selective M2-muscarinic receptor antagonist decreased bradycardia related with grayanatoxin and AF-DX 116 substance and proposed that grayanatoxin affected the heart by acting on M2-muscarinic receptors. Generally, fluid treatment is enough even in bradycardia with severely decreased blood pressure; vasopressor treatment is rarely necessary. The heart rate and blood pressure normalize in 2-9 hours (6). Generally, sinusal bradycardia and conduction defects response to atropin treatment. Most cases without mortality have been reported from Turkey (7). Our patient who presented with bradycardia and decreased blood pressure improved with rapid administration of serum saline and atropin without developing any severe complication.

Conclusively, mad honey intoxication should be absolutely interrogated in cases with unexplained bradycardia and decreased blood pressure especially in endemic areas and families should be informed that they should keep their children away from this honey.

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