

Case Report / Olgu Sunusu**A Rare Cause of Complete Atrioventricular Block and Accelerate Nodal Rhythm;
Mad Honey Poisoning****Atrioventriküler Tam Blok ve Akselere Nodal Ritmin Nadir Bir Nedeni; Deli Bal
Zehirlenmesi**İbrahim Altun¹, Fatih Akın¹, Nuri Köse², Halil Beydilli¹, Ethem Acar²

¹ Mugla Sıtkı Kocman
University, Department of
Cardiology.

² Mugla Sıtkı Kocman
University, Department of
Emergency Medicine.

Corresponding Author:

Dr. İbrahim Altun

Mugla Sıtkı Kocman
University, Department of
Cardiology.

E-mail:

ibrahim_altun@yahoo.com

Tel: 506 2979960**Özet**

Nadir bir gıda zehirlenmesi olan deli bal zehirlenmesi Karadeniz bölgesi ve dünyanın diğer bölgelerinde görülebilmektedir. Ericaceae ve Sapindaceae ailesinin *Rhododendron ponticum* bitki türlerinden üretilmiş nektarın grayanotoxin ile kontamine olmuş balın tüketilmesiyle ortaya çıkar. Deli bal zehirlenmesi tam atriyoventriküler blok gibi ciddi kardiyak komplikasyonlarla sonuçlanabilmektedir. Tanı genellikle bal alımı hikayesiyle konur. Bu vakada tam atriyoventriküler blok ve akselere nodal ritm ile ilişkili deli bal zehirlenmesini tanımlandı.

Anahtar Kelimeler: Tam atriyoventriküler blok, Deli bal zehirlenmesi, Nodal ritm

Abstract

An unusual type of food poisoning, mad honey intoxication, can be observed in the Black Sea region of Turkey and various other parts of the world. It can occur after ingestion of grayanotoxin-contaminated honey produced from the nectar of *Rhododendron ponticum* and other plant species, chiefly of the Ericaceae and Sapindaceae families. Mad honey intoxication can result in severe cardiac complications, such as complete atrioventricular block. The diagnosis is generally reached on the basis of the patient's history of honey intake. In this report, we describe the case of a patient who had mad honey related complete atrioventricular block and accelerate nodal rhythm.

Key words: Complete Atrioventricular Block, Nodal Rhythm, Mad Honey Poisoning

Başvuru Tarihi/Received :

06-03-2014

Düzeltilme Tarihi/Revised:

14-04-2014

Kabul Tarihi/Accepted:

16-04-2014

Introduction

Mad honey obtained from *Rhododendron Ponticum* and *Luteum* species of *Rhododendron* plant family. These plants are seen in Black Sea region of Turkey as well as countries such as Spain, Portugal, Japan, Brazil, USA, Nepal.^{1,2} In cases of severe intoxication, bradycardia and rhythm disturbances, including complete atrioventricular block, can be seen.^{3,4} The diagnosis is generally reached upon learning of a patient's history of honey intake. In this report, we describe a case of a patient who presented with mad-honey-related complete atrioventricular block.

Case Report

A 70-year-old man with no history of heart disease or drug use was admitted to our emergency department with presyncope and hypotension following 30–45 minutes after ingestion of one teaspoon of honey. On admission, the patient displayed symptoms of general weakness and dizziness. Upon history-taking, we learned that the patient's breakfast had included nearly 100 mL of honey brought from Akcakoca, a city in the western Black Sea region of Turkey, 7 days before. Physical examination showed hypotension (blood pressure, 80/60 mmHg). Electrocardiography (ECG) revealed complete atrioventricular block, with nodal rhythm (Figure 1).

Cardiac enzymes and other biochemical parameters were normal. Vital signs improved rapidly after saline infusion and sinus rhythm was restored within the following 8 hours, no atropine was needed. No pathologic finding was noted on subsequent 24-hour monitoring and transthoracic echocardiography. The results of treadmill stress-testing performed before discharge were negative for ischemia.

Discussion

Rhododendron is a genus of flowering plants in the family Ericaceae. *Rhododendrons* and

certain other plants produce grayanotoxin in their pollen and nectar. Honey made from this nectar can cause grayanotoxin poisoning, or “mad-honey intoxication,” as it is known by the rural populace.

The toxicity of grayanotoxin lies in its ability to bind to the group II receptor site in voltage-gated sodium channels within the cell. In general, the sodium channel alpha subunit protein consists of 24 interconnected membrane spanning alpha-helices that are organized as four repeats of 6 alpha-helices each. Grayanotoxin binds to sodium channels in the cell membrane, which are involved in voltage-dependent activation and inactivation, and it prevents inactivation. This maintains excitable cells in a depolarized state,⁷ a state in which they behave like cholinergic agents and cause dose-dependent hypotension, bradycardia, and respiratory-rate depression. Atropine improves both bradycardia and respiratory-rate depression, but selective M2-muscarinic receptor antagonists only restore heart rate, which suggests that M2-muscarinic receptors are involved in the cardiotoxicity. In addition, oscillatory afterpotentials triggered by grayanotoxin can result in cardiac tachyarrhythmias.^{8,9}

The symptoms of mad honey intoxication may vary from person to person and in some conditions (advanced age, cardiac medicine usage). Generally, the mad honey intoxication is shown with gastrointestinal symptoms. A number of clinical signs have been associated with mad honey disease.⁵ Most often hypotension, cardiac rhythm disorders (first, second and third degree AV block, asystole, and sinus bradycardia), nausea and/or vomiting, sweating, dizziness and impaired consciousness have been observed. More rarely, syncope, blurred vision or diplopia and salivation have been described. In some rare cases, convulsion, atrial fibrillation, asystole and myocardial infarction were observed.⁶

The toxic effects of mad honey are rarely fatal and generally last for no more than 24 hours. In the event of atrioventricular block, intravenous atropine sulfate can usually restore

sinus rhythm, but in some refractory cases vasopressor agents or a temporary pacemaker may be needed.¹⁰

A clinical evaluation that includes a detailed history and examination is generally sufficient

to establish the diagnosis of mad-honey intoxication. We don't forget the mad honey one of the reason of dysrhythmia in our country.

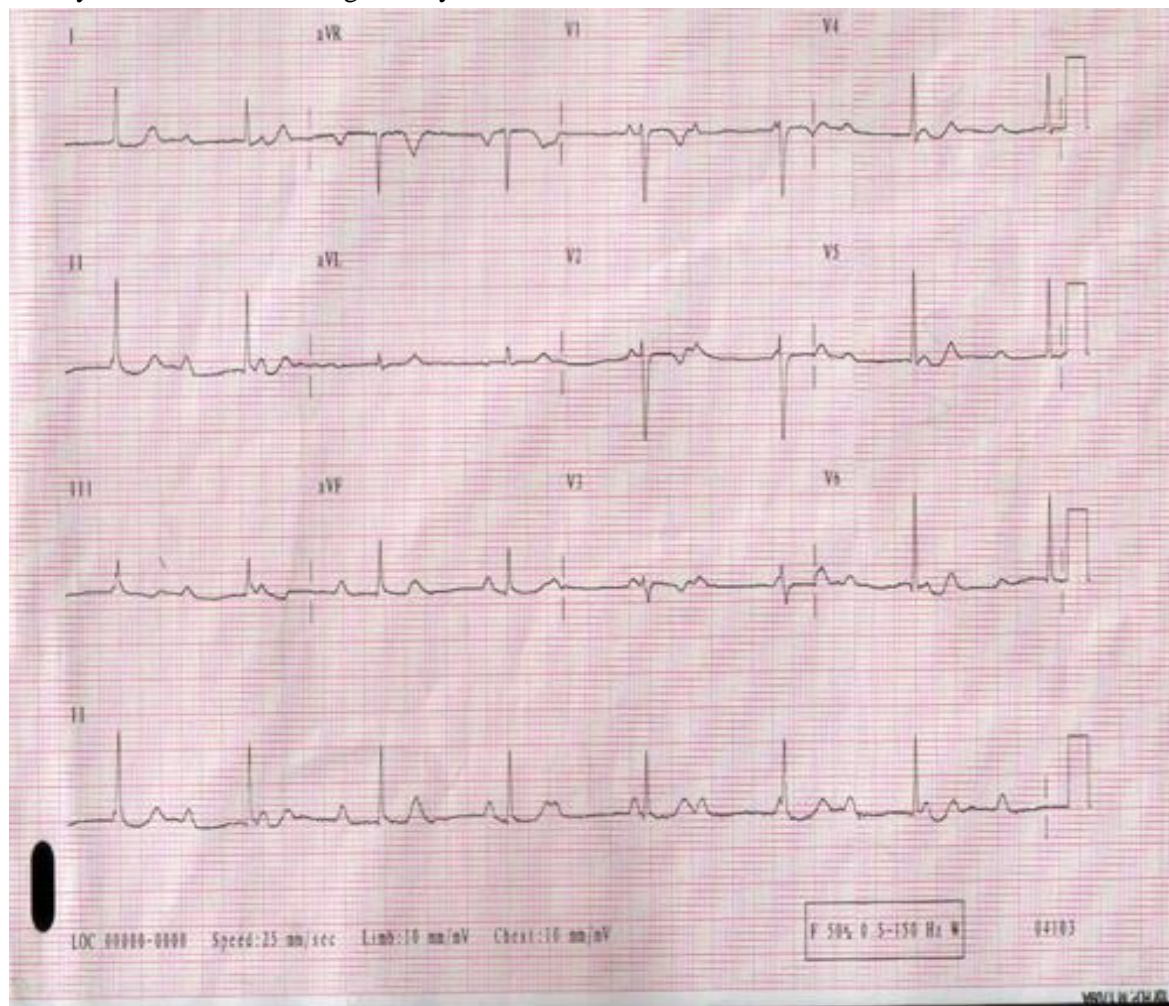


Figure 1

References

1. Goldfrank's Toxicologic Emergencies. Plant: Grayanotoxin . Chapter 78. 7th ed. New York: Mc-Graw-Hill; 2002. p. 1171.
2. Onat FY, Yegen BC, Lawrence R, Oktay A, Oktay S. Mad honey poisoning in man and rat. *Rev Environ Health* 1991; 9(1):3-9.
3. Ergun K, Tufekcioglu O, Aras D, Korkmaz S, Pehlivan S. A rare cause of atrioventricular block: mad honey intoxication. *Int J Cardiol* 2005;99(2):347-8.
4. Gunduz A, Turedi S, Uzun H, Topbas M. Mad honey poisoning. *Am J Emerg Med* 2006;24(5):595-8.
5. Dursunoglu D, Gur S, Semiz E. A case with complete atrioventricular block related to mad honey intoxication. *Ann Emerg Med* 2007;50(4):484-5.
6. Akinci S, Arslan U, Karakurt K, Cengel A. An unusual presentation of mad honey poisoning: acute myocardial infarction. *Int J Cardiol* 2008;129(2):e56-8.
7. Gossinger H, Hruby K, Haubenstock A, Pohl A, Davogg S. Cardiac arrhythmias in a patient with grayanotoxin-honey poisoning. *Vet Hum Toxicol* 1983;25(5):328-9.
8. Seyama I, Yamaoka K, Yakehiro M, Yoshioka Y, Morihara K. Is the site of action of grayanotoxin the sodium channel gating of squid axon? *Jpn J Physiol* 1985;35(3):401-10.
9. Brown BS, Akera T, Brody TM. Mechanism of grayanotoxin III-induced afterpotentials in feline cardiac Purkinje fibers. *Eur J Pharmacol* 1981;75(4):271-81.
10. Dilber E, Celiker A, Karagoz T, Kalkanoglu HS. Permanent transfemoral pacemaker implantation in a child with Maroteaux Lamy syndrome. *Pacing Clin Electrophysiol* 2002;25 (12):1784-5.