DOI:10.24938/kutfd.789412 Kırıkkale Üniversitesi Tıp Fakültesi Dergisi 2021;23(1):174-179
Case Report *Olgu Sunumu*

IS EMERGENCY ROOM OBSERVATION SUFFICIENT FOR MAD HONEY POISONING? A CASE REPORT

Deli Bal Zehirlenmelerinde Acil Servis Gözlemi Yeterli Midir? Vaka Sunumu

Metin OCAK[1], Nur ŞİMŞEK YURT[2]

[1]Samsun Gazi Devlet Hastanesi, Acil Kliniği, SAMSUN, TÜRKİYE
[2]Samsun Eğitim ve Araştırma Hastanesi, Aile Hekimliği Kliniği, SAMSUN, TÜRKİYE

ABSTRACT

Grayanotoxin poisoning is most commonly seen in the East Black Sea Region of Turkey due to consumption of mad honey, which is made by bees from the flowers of the rhododendron plant. Mad honey poisoning is dose dependent. In low doses, it causes dizziness, hypotension and bradycardia. In high doses, it can cause unconsciousness, seizures and atrioventricular blocks. Local people are well aware of mad honey poisoning and generally do not go to the hospital for mild symptoms. In clinical practice, patients with mad honey poisoning are kept under coronary intensive care observation for at least 12-24 hours. As seen in this case report as well as in some publications in the literature, stable patients who respond to atropine and fluid therapy may not need to be hospitalized. In this case report, we present a patient with sinus bradycardia due to mad honey poisoning from the East Black Sea Region of Turkey, who responded to intravenous fluid and atropine treatment in a short time.

***Keywords**: Mad honey poisoning, sinus bradycardia, syncope*

ÖZ

Türkiye'nin Doğu Karadeniz bölgesinde daha sıklıkla gözlenen grayanotoksin zehirlenmesi, ormangülü bitkisinin çiçeklerinden beslenen arıların yaptığı deli baldan kaynaklanmaktadır. Deli bal zehirlenmeleri doz bağımlıdır. Düşük dozlarda baş dönmesi, hipotansiyon ve bradikardiye neden olurken yüksek dozlarda bilinç bozukluğu, nöbet ve atriyoventriküler bloklara neden olabilmektedir. Doğu Karadeniz Bölgesi halkı deli bal zehirlenmesi konusunda tecrübeli olduğu için hafif semptomları olduğunda genellikle hastaneye başvurmazlar. Klinik pratikte deli bal zehirlenmesi olan hastalar en az 12-24 saat koroner yoğun bakım gözlemi altında tutulmaktadırlar. Literatürdeki bazı yayınlarda olduğu gibi bu vaka sunumunda da görüldüğü üzere atropin ve sıvı tedavisine yanıt veren stabil hastaların hastanede yatmalarına gerek olmayabilir. Biz bu vaka sunumunda Doğu Karadeniz kaynaklı deli bal zehirlenmesine bağlı sinüs bradikardisi olan, intravenöz sıvı ve atropin tedavisine kısa sürede yanıt veren bir hastadan bahsedeceğiz.

***Anahtar Kelimeler**: Deli bal zehirlenmesi, sinüs bradikardisi, senkop*

Correspondence / Yazışma Adresi: **Dr. Metin OCAK**
Yeni Mahalle, 3286 Sokak, 1-A, Atakum, SAMSUN, TÜRKİYE
Phone / Tel: +90 506 1252010 **E-mail /** E-posta: mdmocak@gmail.com
Received / Geliş Tarihi: 02.09.2020 **Accepted /** Kabul Tarihi: 10.12.2020

Kırıkkale Ün Tıp Derg. 2021;23(1):174-179
Doi: 10.24938/kutfd.789412

INTRODUCTION

Mad honey is produced by Rhododendron Ponticum and Luteum species of Rhododendron plant family. When honey containing grayanotoxin is ingested, mad honey poisoning develops. Several plants of the Ericaceae (e.g., Rhododendron, Pieris, Agarista and Kalmia) family produce grayanotoxins which can cause poisoning among humans. Plants containing grayanotoxin grow in the eastern parts of the Black Sea Region of Turkey. Also there are reports from different parts of the world such as South America (Brazil), North America (USA), Europe (Portugal and Spain) and Asia (Japan and Nepal) in the literature (1). Mad honey poisoning has the potential to cause death if left untreated. In clinical monitoring; bradycardia, cardiac arrhythmia, hypotension, nausea, vomiting, sweating, increased salivary secretion, dizziness, weakness, loss of consciousness, fainting, blurred vision, tremors, cyanosis and convulsions may be seen. In fact, there are even reported cases of asystole (2).

In this report, we present a patient with mad honey poisoning presenting with sinus bradycardia and syncope who responded to atropine and normal saline treatment. A written permission was obtained from the patient to publish the case.

CASE REPORT

A 61-year-old female patient, with no history of disease other than osteoporosis, was brought to the emergency room by ambulance with a syncope episode that occured after complaints of abdominal pain, nausea-vomiting, dizziness and blurred vision within 15-20 minutes after eating approximately 1 teaspoon of honey gathered from the East Black Sea Region (Ayder Plateau). When she arrived at the emergency service, her general condition was moderate and she was lethargic. Her blood pressure was: 70/40 mm/Hg, pulse: 45 /min, respiratory rate: 16 /min and temperature was 36.7° C. Sinus bradycardia was present and heart rate was detected as 46 beats/ min in the 12-lead surface ECG of the patient (Figure 1). From the patient's history, physical examination, and ECG findings, mad honey poisoning diagnosis was considered in the patient. One mg of atropine was administered intravenously and bolus infusion of normal saline was started immediately. About 10 minutes later she was conscious with improvement of bradycardia on ECG and blood pressure (100/60 mm/Hg). During follow up; all vital signs returned to normal, bradycardia disappeared and the ECG was back to sinus rythym (heart rate:76) (Figure 2). All the laboratory tests, namely, complete blood count, kidney function tests, liver function tests, electrolyte values and cardiac enzyme values were normal. The patient was consulted with the cardiologist, who recommended hospitalization for treatment and follow-up. However, the patient refused to be hospitalized and left the hospital after 3 hours, on her own will and responsibility. After 24 hours, we reached the patient via her registered phone number in the hospital recordings and checked her health status and she reported to be asymptomatic for mad poisoning.

DISCUSSION

Bee production is a widespread activity in the Black Sea region. Local Caucasian bees (Apis mellifera caucasia) produce honey from natural flora within a 5 km^2 area. It is thought that of the various rhododendron species widespread in the local regional flora, Rhododendron luteum and Rhododendron ponticum are the main sources of grayanotoxin (3). Since these plant species grow in forest areas at specific altitudes and in specific valleys, the local inhabitants know which honey produced in which region is mad honey (2).

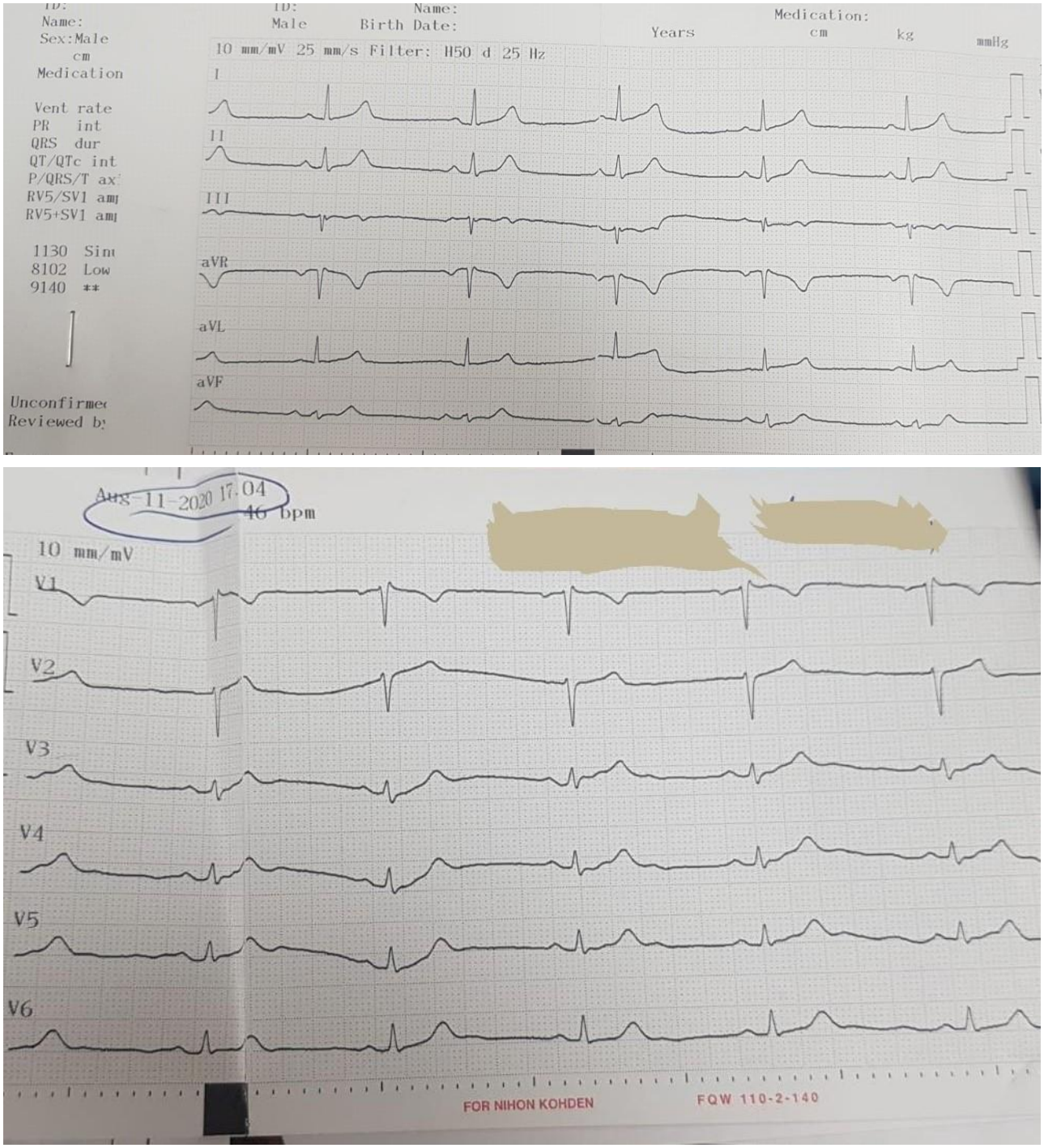

Figure 1: Sinus bradycardia at the first ECG of the patient.

The grayanotoxins bind to the sodium channels in cell membranes. These compounds prevent inactivation; thus, excitable cells (nerve and muscle) are maintained in a state of depolarization, during which entry of calcium into the cells may be facilitated. All of the observed responses of skeletal and heart muscles, nerves, and the central nervous system are related to the membrane effects (4).

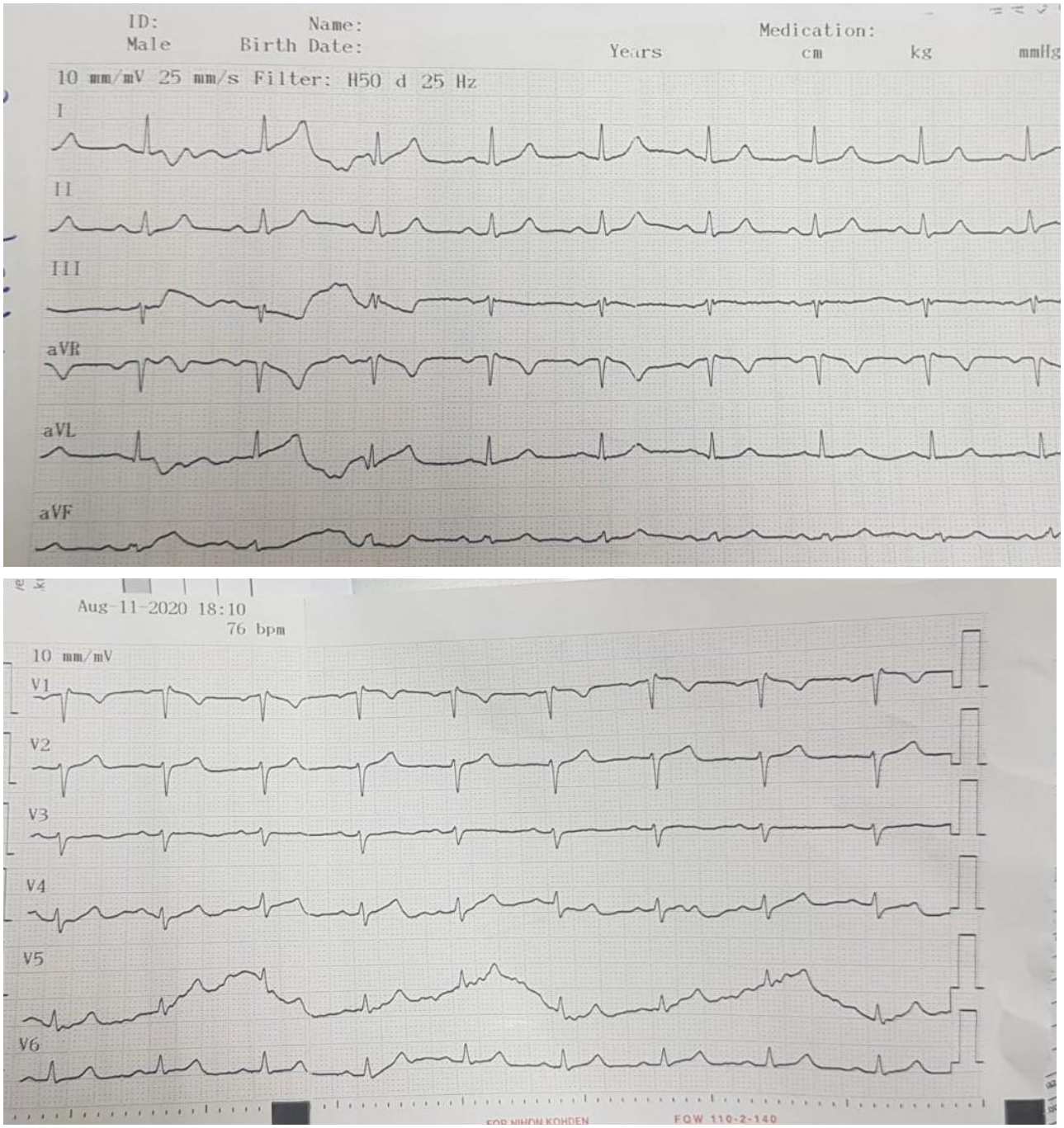

Figure 2: Sinus rythym at the ECG of the patient after 1 mg atropine administration.

Symptoms of poisoning occur after a dose-dependent latent period of a few minutes to 2 or more hours. The precise amount necessary for a toxic dose is not known. In general, the severity of the honey poisoning depends on the amount ingested. The concentration of grayanotoxin ingested may differ greatly from case to case. As grayanotoxins are metabolized and excreted rapidly, patients generally regain consciousness and feel better within hours, and heart rate and blood pressure usually return to normal within 2 to 9 hours (5). The most common clinical findings in patients after consumption of mad honey are nausea, vomiting, dizziness, confusion and a feeling of being about to faint. Patients do not generally present to hospital when this occurs, and treatments based on local custom, such as rest and consuming salty water or salted yoghurt, are

common. Such individuals generally recover within a few hours. Patients most commonly present to hospital with cardiovascular findings such as cardiac arrhythmia. Sinus bradycardia is particularly common. Other arrhythmias developing in association with mad honey intoxication are non-specific bradyarrhythmia, nodal rhythm, complete atrioventricular (AV) block and 2nd degree AV blocks. Only one case of asystole has been reported (6). Although mad honey poisoning is well known by the local people, its use and intoxication cases are unfortunately not decreased because mad honey is used as an alternative treatment method in diseases such as stomach pain, intestinal diseases and hypertension in the Black Sea Region. In addition, mad honey is used as a sexual stimulant in this area (5).

In clinical practice; traditionally, patients with mad honey poisoning even if they have no critical symptoms are followed up in the hospital for 12-24 hours. In a review published by Erenler in 2016, it was reported that mad honey poisoning usually causes mild symptoms, and cardiovascular symptoms are the reason for hospital admission. Among cardiovascular findings, bradycardia and hypotension are the most common. Less commonly, atrial fibrillation, nodal rhythm, atrioventricular block, prolonged QT interval and rarely asystole may be seen. All mild symptoms and the majority of cardiovascular symptoms respond well to intravenous fluid and atropine therapy (1). In another article published in 2009, 47 mad honey poisoning cases admitted to 3 different hospitals were examined. Sinus bradycardia was observed in 78.7% of the patients, nodal rhythm in 12.8%, normal sinus rhythm in 6.4%, and complete AV block in 2.1%. Only one patient needed a pacemaker. There was no difference in mortality and morbidity between stable patients who were discharged from the emergency service and those who were hospitalized and followed up (7). Studies on how long patients with mad honey poisoning should be followed are limited in the literature, and more studies are needed on this subject. However, with the available data, we think that patients who respond quickly to fluid therapy and / or atropine therapy in the emergency department, whose vital signs are stable and who do not need invasive treatment can be safely discharged after 6-8 hours of emergency follow-up. Our case also responded quickly to intravenous normal saline and atropine treatment in a short time. Our patient was discharged from the emergency service on her own will after 3 hours of observation, with no medical problems afterwards.

Researchers' Contribution Rate Statement: Metin Ocak: Data collecting, literature research, design and prepare the article. Nur Şimşek Yurt: Literature research, the planning of the article, the critical revision of the article. All authors have read and approved the final version of the article.

Conflict of Interest: The authors declare that they have no conflict of interest.

Support and Acknowledgment: The authors deny any conflicts of interest related to this study.

Informed Volunteer / Consent Form: In this case, from the patient; the informed consent form was signed and approved.

REFERENCES

1. Erenler AK. Cardiac Effects of mad honey poisoning and ıts management in emergency department: A review from Turkey. Cardiovasc Toxicol. 2016;16(1):1-4.
2. Gunduz A, Durmus I, Turedi S, Nuhoglu I, Ozturk S. Mad honey poisoning-related asystole. Emerg Med J. 2007;24(8):592-3.
3. Maejima H, Kinoshita E, Seyama I, Yamaoka K. Distinct sites regulating grayanotoxin binding and unbinding to D4S6 of Na (v) 1.4 sodium channel as revealed by improved estimation of toxin sensitivity. J Biol Chem. 2003;278(11):9464-71.

4. Onat FY, Kurtel H, Yegen BC, Lawrence R, Oktay A, Oktay S. Mad honey poisoning in man and rat. Rev Environ Health. 1991;9(1):3-9.
5. Gunduz A, Turedi S, Uzun H, Topbas M. Mad honey poisoning. Am J Emerg Med. 2006;24(5):595-8.
6. Tatli O. The Black Sea's poison; Mad honey. J Anal Res Clin Med. 2017;5(1):1-3.
7. Gunduz A, Meriçe ES, Baydın A, Topbaş M, Uzun H, Türedi S et al. Does mad honey poisoning require hospital admission? Am J Emerg Med. 2009;27(4):424-7.