

## OLGU SUNUMU

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**Konuralp Tıp Dergisi**  
e-ISSN1309-3878  
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## Bitter Honey Intoxication and Hazardous Arrhythmias: Two Cases

### ABSTRACT

Bitter-honey is named as a kind of honey which is produced by bees from the nectar of *Rhododendron luteum* and *Rhododendron ponticum* containing grayanotoxin. The patients with bitter honey intoxication admit to emergency room with heart symptoms including bradycardia, hypotension and syncope. These symptoms are mainly due to heart conduction defects such as complete AV block, asystole, and sinus bradycardia. Herein, we presented two cases with bitter-honey intoxication. Although symptoms presented by patients were similar in two cases, different conduction disorders including high-degree AV block and complete AV block were seen in first case, and nodal rhythm were seen in second case. In conclusion, the physicians should manage the patients with similar symptoms on admission for life-threatening arrhythmias due to bitter honey intoxication.

**Keywords:** Mad honey, heart conduction defect, arrhythmia, grayano toxin, atropine

## Deli Bal Zehirlenmesi ve Tehlikeli Aritmiler: İki Olgu

### ÖZET

Deli bal grayanotoksin içeren *Rhododendron luteum* and *Rhododendron ponticum* adlı bitki türü nektarından yapılan bir tür bal olarak adlandırılır. Deli bal zehirlenmesi olan hastalar acil servislere bradikardi, hypotansiyon ve senkop gibi genellikle kardiyak semptomlarla başvururlar. Bu semptomlar esas olarak tam AV blok, asistol ve sinus bradikardisi gibi kalp iletim bozukluklarından kaynaklanır. Burada, deli bal zehirlenmesi olan iki olgu sunulmuştur. İki vakada da semptomlar benzer olsa da, birinci vakada yüksek dereceli AV blok ve tam blok; ikinci olguda nodal ritim izlenmiştir. Sonuç olarak, hekimlerin deli bal zehirlenmesine bağlı hayati tehdit eden aritmilerde başvuru sırasında benzer semptomları üstesinden gelmelidir.

**Anahtar Sözcükler:** Deli bal, kalp iletim bozukluğu, aritmi, grayano toksin, atropin

## INTRODUCTION

Bitter-honey is named as a jar of honey which is produced by bees from the nectar of *Rhododendron luteum* and *Rhododendron ponticum* containing grayanotoxin. Almost all cases published in literatures are from area covering Rhododendron familia vegetation found on mountainous of east-black sea region, Turkey (1). Grayanotoxin binds to sodium ion channel in cell membranes by inactivating the receptor. Symptoms are dose-dependent. Dizziness, perspiration, vomiting and salivation are initial symptoms seen within 30-60 minutes after ingestion of honey containing grayanotoxin and commonly observed in almost all cases (2). In higher doses, symptoms include loss of coordination, progressive muscle weakness, bradycardia and nodal rhythm. Heart symptoms are usually due to cardiac conduction defects such as AV complete block, second-degree heart block, nodal rhythm and asystole (3).

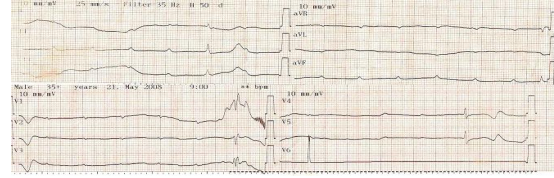
In this region, bitter-honey consumption is rare, but sometimes it can cause severe life-threatening health conditions like in our cases. Herein, that is why we presented these cases, and we review management of patients with bitter-honey intoxication.

### CASE 1

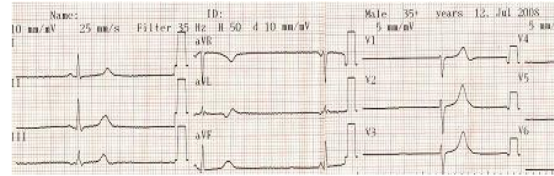
After ingestion of about four spoons of "bitter honey", 79 year-old male patient presented with vomiting, nausea and severe dizziness to our emergency room of local public hospital. Blood pressure and pulse of patient was 80/60 mmHg and 17/min respectively. Then, 1 mg IV atropine was administered. His pulse value rise up 48/min. After consultation with cardiologist from advanced hospital, the patient was transferred to this hospital 12-lead ECG revealed AV complete block, because the patient's health status was not so much improved. Then, temporary pace-maker was implanted, and he was hospitalized to coronary intensive care unit. On subsequent days, normal sinus rhythm on ECG records was obtained. Temporary pacemaker was explanted and he was discharged (figure 1).

### CASE 2

55 year-old male patient was admitted to emergency room with complaint of dizziness, fatigue, nausea, vomiting and subsequent syncope after he had taken about 6 spoons of "bitter honey". He had no history of known-cardiac problems and any regular medication. Of patient's vital signs, blood pressure and pulse was detected as 120/80 mmHg and 52/min respectively on admission. First ECG recording of patient revealed nodal rhythm (figure 2). On follow-up, his general health status improved and subsequent ECG was observed as normal sinus rhythm. Subsequently, his complaints have passed away, and he was discharged.



**Figure 1.** 12-lead ECG shows high degree AV block in 79 years-old male patients with bitter honey intoxication



**Figure 2.** 12 lead ECG shows nodal rhythm in 55 years-old male patients with bitter honey intoxication

## DISCUSSION

The patients with bitter honey intoxication admit to emergency room usually with dizziness, fainting, perspiration and syncope. Almost all of reported cases of bitter-honey intoxication are associated with heart symptoms.

In recent reports, atrio-ventricular block (AV) types which are triggered by ingestion of bitter-honey have been reported. Although complete AV block are common, second-degree AV block are also in recent cases (4,5).

The most common arrhythmias were sinus bradycardia and nodal rhythm reported in past case series. These symptoms are dose-dependent, and heart ones are seen in higher doses. Besides these symptoms, diplopia and blurred vision and non-ST-segment elevation of myocardial infarction are also reported in cases (6).

However, number of different cases due to grayanotoxin intoxication increases recent days. In more than 70% of those cases, non-specific bradyarrhythmia and sinus bradycardia were reported. Heart block disorders accounts for more than 25% of them, but asystole was seen in one case. Besides these symptoms, diplopia and blurred vision and non-ST-segment elevation of myocardial infarction are also reported in cases (7,8).

It generally responds to IV atropine and vasopressin. Health status of patients with bitter honey intoxication usually improves with IV atropine administration and enough hydration. The patients not responding to this treatment may require bradycardia algorithm declared in Guidelines of High Cardiac Life Support (1).

Considering information of recent literatures among with case reports, AV conduction disorders can be life-threat cardiac arrhythmia resulting mad honey intoxication. Distribution of *Rhododendron* plant species is not only restricted to Turkey, but also seen in Japan, Nepal, British Colombia, United States, and Brazil (9).

Therefore, bitter-honey intoxication can be potentially seen all over the world. Moreover, we emphasize that it is not restricted health problem to only that region of Turkey due to increase in people movement and international nutrition transport. In conclusion, on depending our recent knowledge about bitter honey intoxication, physicians should

be aware of that this intoxication and update their self about managing bitter-honey intoxication. Today, we have still insufficient experience and data about bitter-honey intoxication, so further pharmacological investigations should be studied.

#### REFERENCES

1. Gunduz A, Turedi S, Russell R M, Ayaz F A. Clinical review of grayanotoxin/mad honey poisoning past end present. *Clinical Toxicology*. 2008; 46(5): 437–442.
2. Janiszewski L. The action of toxins on the voltage-gated sodium channel. *Pol J Pharmacol Pharm*. 1990; 42(6):581–588.
3. Gunduz A, Bostan H, Turedi S, Nuhoglu S, Patan T. Wild flowers and mad honey. *Wilderness Environ Med*. 2007;18(1): 69–71.
4. Koca I, Koca AF. Poisoning by mad honey: a brief review. *Food Chem Toxicol*. 2007; 45 (8):1315–8
5. Weiss WT, Smetana P, Nurnberg M, Huber K. The honey man-Second degree heart block after honey intoxication. *Int J Cardiol*. 2008; e1-e2.
6. Yilmaz O, Eser M, Sahiner A, Altintop A, Yesildağ O. Hypotension, bradycardia and syncope caused by honey poisoning. *Resuscitation*. 2006;68(3): 405–408.
7. Dursunoglu D, Gur S, Semiz E. A case with complete atrioventricular block related to mad honey. *Annals of emergency medicine*. 2007;50(4): 484–485.
8. Yildirim N, Aydin M, Cam F, Celik O. Clinical presentation of non-ST-segment elevation myocardial infarction in the course of intoxication with mad honey. *Am J Emerg Med*. 2008; 26(1):108.
9. Choi SH, Lee SW, Hong YS, Lim SI. Grayanotoxin Poisoning from Flower of *Rhododendron mucronulatum* in Humans. *Bull Environ Contam Toxicol*. 2007; 78(1):11–12.