



## Death Caused by Honey Bee Stings: Case Report

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### Abstract

*A bee sting is always potentially dangerous. The severity and duration of reaction to bee venom can vary from one person to another. Most people experience a local non-serious allergic reaction to bee venom. However, depending on the location and number of bee stings, previous history of allergic reactions may increase possibility of a severe life-threatening events. A 49 years old man having a history of allergic reaction to bee sting was found dead near to 9 nests. There were many dead honey bees on him. External examination of the body showed more than 50 stings all over the body. Upon medico-legal autopsy, pulmonary edema and swelling in laryngeal area were found as the internal findings. History of allergy, autopsy findings and evidences obtained from crime scene investigation were evaluated all together and, the cause of death was revealed as an anaphylactic shock due to bee stings.*

**Key Words:** Bee stings, anaphylaxis, sudden death, autopsy

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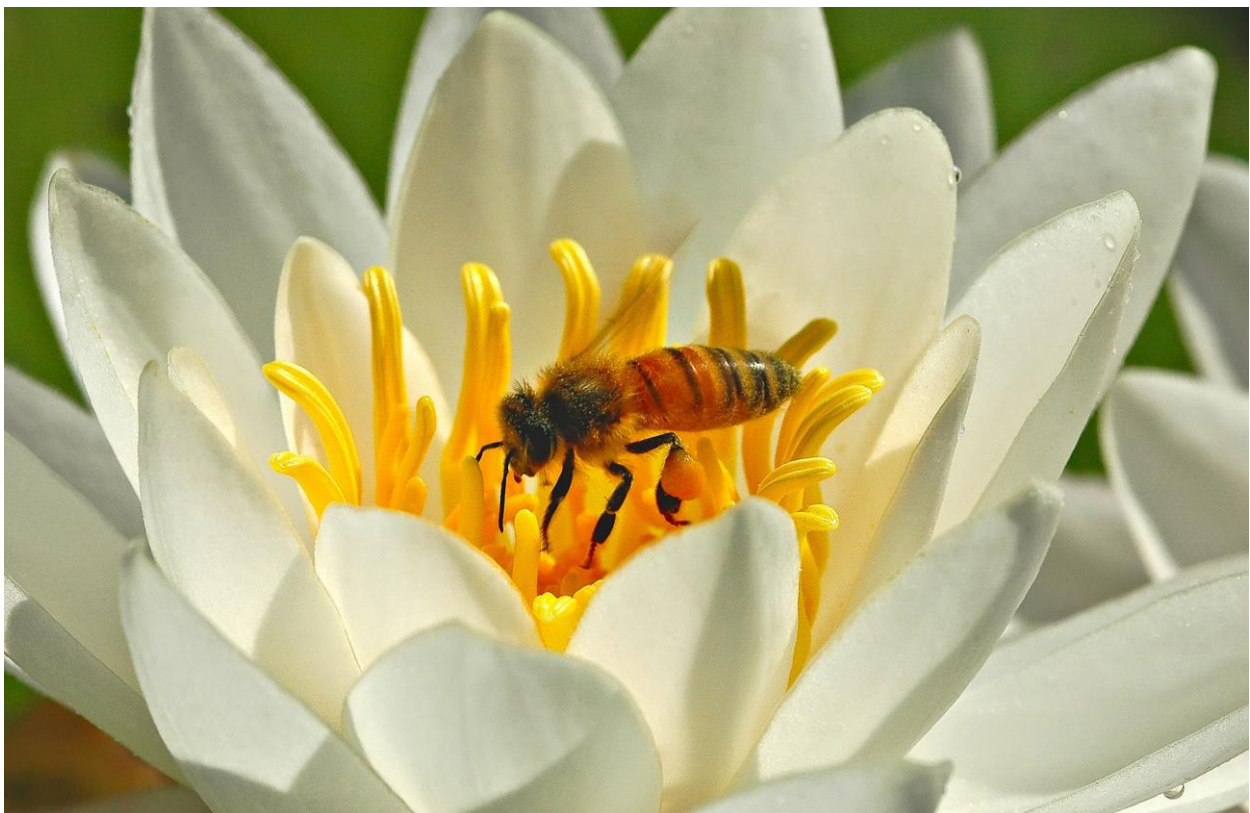
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## **Introduction**

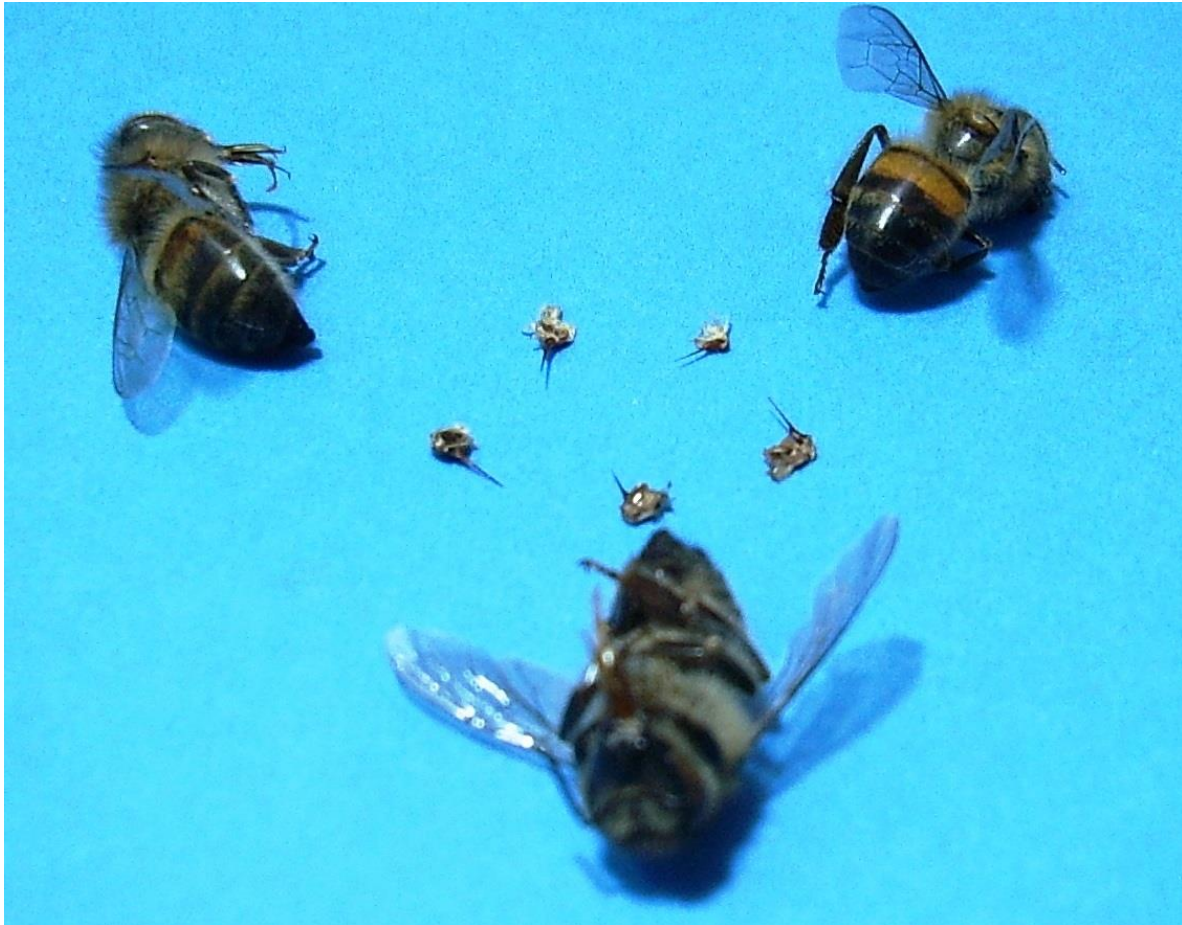
Arthropod bites and stings are capable of inflicting injury, allergic reactions and transmitting infectious diseases. Hymenoptera order members are particularly important because of being nearly ubiquitous in the nature. Their stings may lead to fatal allergic reactions [1].

The well-known members of the Hymenoptera order are bees, wasps, hornets, yellow jackets and ants. This order in fact consists of about 100,000 species of bees, wasps and ants. Many of these animals have poison glands and stinging apparatus [1-4]. Among the species of Hymenoptera, bees are the most commonly encountered species because of beekeeping activities. Two of the more commonly encountered species of bee are honeybee (*Apis mellifera*) (Figure 1) [5] and the bumblebee (*Bombus* species).



**Figure 1.**

A honeybee has a barbed stinger that usually remains in the skin following sting. A honeybee dies following stinging because it eviscerates itself while leaving its stinger and venom sac behind (Figure 2a-2b).



**Figure 2a.**

A bee sting is always potentially serious. The severity and duration of a reaction can vary from one person to another. In addition, one's own reaction to a bee sting may differ between occurrences. Most persons experience a local non-serious allergic reaction to bee venom. However, depending on the location and number of bee stings received, as well as the ever-present possibility of a severe allergic reaction to bee venom, a serious reaction can be precipitated that can be life-threatening.

Bee venom is a complex substance that acts in several tissues. Although severe allergic reactions have occurred after one or more stings, several deaths have been reported without allergic manifestations, emphasizing the toxic effects of massive poisoning. A number of

about 500 stings have been considered necessary to cause death by direct toxicity, but as few as 30-50 stings have been proved to be fatal in children. Among the major toxic effects are hemolytic anemia, acute renal failure and shock. Honey bee venom is known as apitoxin; is a bitter colorless liquid. The active portion of the venom is a complex mixture of proteins that causes local inflammation and acts as an anticoagulant. The venom is produced in the abdomen of the worker bees from a mixture of acidic and basic secretions. A honeybee can inject 0.1 mg of venom via its stinger. This venom is similar to snake venom and it can be deactivated with ethanol.



**Figure 2b.**

Death as a result of a bee sting is uncommon. Death comes about through multiple mechanisms and not through anaphylaxis alone. Like most cases of sudden death, underlying coronary atherosclerosis appears to be the principal mechanism. External factors that affect mortality include environmental temperature and site of sting [6-9].

We present a 49 years old man having a history of allergic reaction to bee sting. He was found dead near to a nest.

## Case

A 49 years old man having a history of allergic reaction to bee sting was found dead near to 9 nests. There were many dead honey bees on him. External examination of the body showed more than 50 stings all over the body (Figure 3a, 3b, 3c, 3d). Upon medico-legal autopsy, pulmonary edema and swelling in laryngeal area (Figure 4) were the internal findings. History of allergy, autopsy findings and findings obtained from crime scene investigation were evaluated together and the cause of death was concluded to be anaphylactic shock resulted from bee stings.



**Figure 3a.**



**Figure 3b.**



Figure 3c.



**Figure 3d.**



**Figure 4.**



## **Discussion**

Anaphylaxis to animal bites and stings has a significant risk of vascular or respiratory reactions. The severity of the reactions varies according to the individual's response and nature of the incidence. Hymenoptera stings are one of the most common causes of anaphylaxis. In US, at least 30-40 people die from Hymenoptera stings, many of whom have no prior history of allergic reactions [9]. Allergic reactions to Hymenoptera group are common among men and particularly among those of over 30 years [3].

Although severe allergic reactions to the sting of the common honeybee (*Apis mellifera*) are a common problem, reported deaths are uncommon in Turkey. In people who are allergic to bee stings, a sting may trigger a dangerous anaphylactic reaction that is potentially deadly. Honeybee stings release pheromones that prompt other nearby bees to attack.

Anaphylactic shock after bee sting resulting from a reaction to certain proteins of the venom is reported to develop in about 2 % of people and may be life-threatening. For patients who experience severe or life threatening reactions to insect stings, there are a series of allergic injections composed of increasing concentrations of naturally occurring venom which provide excellent and usually life-long protections against future insect stings. People known to be highly allergic to insect stings may carry around epinephrine in the form of a self-injectable form for the treatment of an anaphylactic shock [3].

In the presented case, though known past serious reactions to bee sting, he was found dead near to 9 nests, and there were more than 50 stings all over the body. Pulmonary edema and swelling in laryngeal area detected at autopsy confirmed the diagnosis of anaphylaxis [6-9]. History of allergy, autopsy findings and findings obtained from crime scene investigation were evaluated together and the cause of death was concluded to be anaphylactic shock resulted from bee stings. Honeybee species live in colonies and generally attack when provoked [1]. In normal settings, one must be prevented to enter the area of nests unless beekeepers with special cloths. Psychiatric disease of the case may have played an important role in the death process because of inability to realize the fatal outcome of being near the nests and provoke them.

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