

A Case of Ant Sting by *Crematogaster Matsumurai Vagala*

Jung-Dae Kang, M.D., So-Jin Kim, M.D., Nyoung-Hoon Youn, M.D., Bounng-Jin Kim, Ph.D.*,
Seok Don Park, M.D.

Department of Dermatology, Wonkwang University School of Medicine,

**Department of Biological Science, College of Natural Science, Wonkwang University,
Iksan, Korea*

Reactions from stinging insects are significant to dermatologists because of the wide variety of clinical presentations from mild local reaction to severe anaphylactic reaction.

Although ant sting commonly occurs, it has been rarely reported in the literatures.

We experienced a unique case with allergic reactions by the ant of the *Crematogaster matsumurai vagala*, subfamily Myrmicinae, family Formicidae, order Hymenoptera that has not been previously reported. (Ann Dermatol 16(2) 87~89, 2004)

Key Words: Allergic reactions, Ant stings, *Crematogaster matsumurai vagala*

Insects can cause diseases in human beings in four ways: through biting and stinging, by releasing toxins through their hairs, by burrowing into the skin, and through being the vectors for other diseases¹. Allergic reactions to stings by insects belonging to the order Hymenoptera, which include the super-families Apoidea (bees) and Vespoidea (wasps, hornets), are common, but the reactions from ants (order Hymenoptera, superfamily Formicidae) are less known². Reactions from stinging insects are significant to dermatologists because of the wide variety of symptoms that can range from a mild local reaction to a severe anaphylactic reaction³. Ants are found nearly everywhere in the world. Although ant stings are a common occurrence, cases involving them have rarely been reported in scientific journals.

We have experienced a unique case of allergic reaction to the sting of ants belonging to the *Crematogaster* spp. (the subfamily Myrmicinae,

family Formicidae, order Hymenoptera), a case not reported before.

CASE REPORT

A 35-year-old male entomologist visited our hospital because of multiple erythematous skin eruptions with pricking sensation on his left arm and shoulder. The day before coming to the hospital, he had felt a painful stinging sensation on his left arm and shoulder during a mountain climb to collect ants for his investigation. He immediately undressed and found several ants on his left arm and shoulder. Three hours after being stung, he experienced pruritus, discomfort, general weakness and chest tightness, but did not seek a hospital at that time. Once home, his general condition improved, but the following day he noticed multiple pruritic erythematous and edematous papules on the left arm and shoulder (Fig. 1). Sometimes a few pruritic erythematous papules with central punctum were observed. The patient had no known personal allergic and atopic history, nor known sensitization by any insects. The histopathological examination on the erythematous papule revealed mild upper dermal edema, perivascular eosinophilic and mononuclear cell infiltration with swollen endothelial cells.

Received March 4, 2004

Accepted for publication April 26, 2004

Reprint request to: Seok-Don Park, M.D., Ph.D.,
Department of Dermatology, Wonkwang University
Hospital, 344-2 Shinyong-dong, Iksan, Chonbuk 570-711,
Republic of Korea

Tel. 82-63-850-1125, Fax: 82-63-842-1895

E-mail. sdpark@wonkwang.ac.kr



Fig. 1. Multiple erythematous, edematous papules on the left arm.



Fig. 2. Mild upper dermal edema, perivascular eosinophilic and mononuclear cell infiltration in the dermis (H&E, $\times 40$).

Eosinophilic granules were scattered in the upper dermis (Fig. 2). The skin lesions were treated with topical corticosteroid cream.

The stinging ants were identified as *Crematogaster matsumurai vagala* (Fig. 3).

DISCUSSION

Ants are found worldwide, but are especially com-

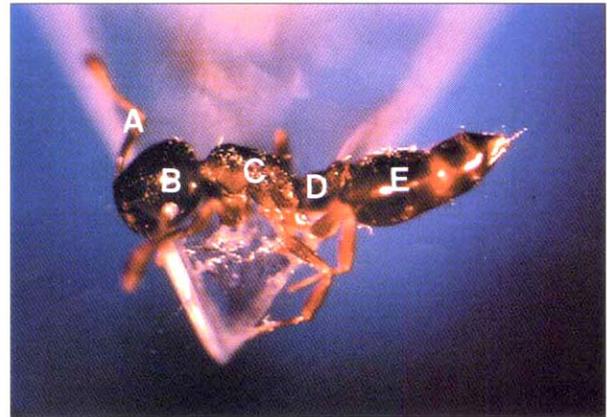


Fig. 3. *Crematogaster matsumurai vagala*; worker in lateral view (A; antenna B; head C; alitrunk D; petiole E; gaster).

mon in hot climates. Most ants live in nests, which may be located in the ground or under rocks or sand. Some species live in close contact with humans, even in modern urban dwellings. There are 5,000 to 10,000 reported species of ant (classified into 8 to 10 subfamilies)

The peak annual incidence of ant stinging occurred every year in July, and this fact might reflect the concomitant seasonal increase of the population of ants in Korea⁴. The stinging ant initially fixes itself with its mandibles to the skin of a subject to attack, creating a sense of pain. It then arches its back at the peduncle, inserts its stinger, and maintains this position for up to 20 to 25 seconds. It may then withdraw the stinger, rotate in a pivotal fashion by maintaining its mandibles in the original position, and repeat the sting². The intensity of the pain is not usually so severe, and generally the pain lasts only several minutes^{2,4}.

The stinging ants that caused the cutaneous reactions in our patient were identified as belonging to the *Crematogaster* spp, subfamily of Myrmicinae, family of Formicidae. To date there has been no report of allergic reactions to the stings of this ant species in Korea. *Crematogaster* is usually found in urban houses. The ant is 2-3 mm long and is brown in colour; The Mesonotal dorsum is nearly flat at the anterior half and lowered at the posterior half. Metanotal grooves are distinctly impressed. Propodeal spines are slender and long, each about twice as long as the width of their base. Petiol is wider than long, the sides in dorsal view abruptly narrowed

posteriorly. The Subpetiolar process in lateral view is acutely triangular projecting anteriorly.

The reactions to insects may be divided into four types: local, systemic, toxic, and extraordinary^{3,5}. The common reaction to insect sting in the non-allergic individuals is local. Most insects (ants, bees and fleas) cause mild erythema and edema. These reactions usually subside within a few hours. Immunity is not required for a local reaction. Systemic reaction, anaphylaxis, is the most dreaded consequence of insect bite hypersensitivity. The majority of these deaths are caused by respiratory failure. Toxic reactions are caused by the action of venom. The reactions are usually developed after multiple stings, which represent that reactions are proportional to the amount venom delivered. Unusual reactions tend to occur mainly in individuals with unusual immune responses, such as serum sickness^{3,5,6}. In our patient, the systemic symptoms such as chest tightness, general malaise, and shortness of breath as well as the local cutaneous reactions were observed, and these reactions were caused by ant stings.

Treatment depends on the type and extent of the reaction. Simple envenomation of a non-allergic individual may require little or no therapy. Local cold compresses, removal of any remnants of insect parts, and analgesics are generally all that is required. Steroid and antihistamines may decrease the edema and pruritus that may accompany stings, and may afford some protection against more severe delayed reactions. Anaphylactic reactions require swift and aggressive medical therapy, including prevention from airway compromise; and maintenance of systemic blood pressure with subcutaneous or intravenous injections of epinephrine^{3,5,6}. Our patient's skin

lesions and symptoms were well treated with topical steroid cream, and the general symptoms subsided gradually after some rest.

In urban environment, *Crematogaster* stings do not normally cause toxic reactions in humans. Our case is unusual insofar as our patient developed a severe allergic reaction to them. We believe that the ants' different living environment may have played an important role in the way their venom affected our patient, myrmecologist, who was stung during his investigation. We report a case of ant sting by *Crematogaster matsumurai vagala* for promoting interest of this condition.

REFERENCE

1. Park JS, Cho BK, Lee WK: A case of insect sting by *Euponera chosensis*. *Korean J Dermatol* 1995; 33:120-124.
2. Lockey RF: Systemic reactions to stinging ants. *J Allergy Clin Immunol* 1974;54:132-146.
3. Elgart GW: Ant, Bee, and Wasp Stings. *Dermatologic clinics* 1990;8:229-236.
4. Kim SC, Hong CS: A case of Anaphylaxis by Ant (*Ectomomyrmex* SPP.) Venom and Measurements of Specific Ig E and Ig G subclasses. *Yonsei Medical Journal* 1992;33:281-287.
5. Pardo RJ, Kerdel FA: Parasites, arthropods, and hazardous animals of dermatologic significance. In: Moscella SL, Hurley HJ, editors. *Dermatology*. Philadelphia: WB Saunders; 1992, pp1969-1971.
6. Eun HC, Oh CH, Kim SN: A case of anaphylaxis due to Bee sting (*Polistes Jadwigae* Dalla Torre). *Korean J Dermatol* 1981;19:653-655.