

Fire Ant: Health Concerns

Background

Fire ants are stinging insects that belong to the same order as bees and wasps. The red-black imported fire ant now infests more than 260 million acres in the southern United States, where it has become a considerable agricultural pest and a significant health hazard. Fire ant mounds may measure up to three feet in diameter and 18 inches in height. Each mound may be teeming with up to 250,000 worker ants that measure approximately ¼ inch in length.

Fire ants may attack with little warning. After firmly grasping the skin with its jaws, the fire ant arches its back as it inserts its rear-end stinger into the flesh, injecting venom from the poison sac. It then pivots at the head and typically inflicts an average of seven to eight stings in a circular pattern. Fire ant venom is unique because of the high concentration of toxins, which are responsible for the burning pain characteristic of fire ant stings.

Reactions

Fire ant sting reactions range from localized itching and swelling with pustule formation to severe, life-threatening anaphylaxis.

Almost all people stung by fire ants develop an itchy, localized hive at the sting site which usually subsides within 30 to 60 minutes. This is followed by a small blister at the site of each sting within four hours. A sterile sore with pus forms in 8 to 24 hours; it then ruptures and scars in 48 to 72 hours. Treatment is aimed at preventing secondary bacterial infection, which may occur if the pustule is scratched or broken. Diabetics and others with circulatory disorders, including varicose veins and phlebitis, are at special risk for complications.

Up to 50% of patients develop large local reactions at the site of fire ant stings. Swelling may last for several days and may be accompanied by itching, redness and pain.

Anaphylaxis

Anaphylaxis is a generalized, systemic allergic reaction to fire ant stings that may be life threatening. It usually occurs in persons sensitized by a previous sting. It may be manifested by flushing, generalized hives, swelling of the face, eyes or throat, difficulty breathing, or loss of consciousness. A physician survey documented 32 deaths due to anaphylactic reactions to fire ant stings in patients 16 months to 65 years of age.

Treatment

Local Reactions:

- ◆ Elevate the extremity and apply ice or a cold compress to reduce swelling and relieve pain.
- ◆ Clean the blisters with soap and water to prevent secondary infection.
- ◆ Do not break the blister.
- ◆ Topical steroid ointments and oral antihistamines may relieve the itching associated with these reactions.
- ◆ Treatment with antihistamines and oral steroids may be useful in severe cases.
- ◆ Since the swelling is due to allergy and not infection, antibiotics are usually not necessary.
- ◆ Seek medical attention if the swelling progresses or if infection is suspected.

Anaphylaxis

Anaphylactic reactions should be managed as a medical emergency! If stung, persons at risk should immediately self-administer epinephrine, take an antihistamine, and report to a physician or emergency room. Further treatment may include epinephrine, antihistamines and corticosteroids. Persons suffering fire ant sting anaphylaxis should be referred to an allergist for skin testing and immunotherapy.

Adrenalin (epinephrine) is the first drug of choice in the treatment of anaphylaxis. Insect sting-allergic patients should carry an emergency kit containing epinephrine (e.g., EpiPen or AnaKit), for self-administration in case of a sting.

Allergy Shots/Immunotherapy

Allergen immunotherapy (allergy shots) has proven to be an extremely effective form of treatment for individuals at risk of insect sting anaphylaxis. Anyone who has suffered a systemic allergic reaction to a fire ant sting should be referred to a trained allergist for skin testing and evaluation for immunotherapy. Treatment goals are to:

- ◆ prevent life-threatening reactions;
- ◆ reduce complications;
- ◆ and alleviate anxiety.

Fire ant whole body extract has been shown to contain relevant venom allergens and appears to be protective. Research studies are presently being conducted to determine the relative effectiveness of fire ant venom and whole body extract in the diagnosis and treatment of fire ant allergy.

The optimal duration of fire ant immunotherapy has not been clearly established. In one study, immunotherapy was discontinued in 31 patients after 2-19 years of treatment. All patients tolerated a fire ant sting challenge at 3 months and 16 of 17 (94%) had no reaction to re-sting one year later.

Avoidance

Fire ant allergic patients should wear closed-toed shoes, socks, and gloves when gardening and take other precautions to avoid stings. Fire ant mounds near the home should be identified and treated with an ant bait insecticide.

Control

Effective methods for insecticide treatment of fire ant mounds use attractant baits consisting of soybean oil, corn grits or chemical agents. The bait is picked up by the worker ants and taken deeper into the mound to the queen. It can take weeks for these insecticides to work.

Prevention

Insect sting allergy is a major health hazard for a significant number of individuals in the southern United States. Fire ants have been found as far west as California and as far north as Washington, D.C. Their migration appears to be limited by the frost line.

Immunotherapy can reduce the risk of subsequent reactions. Standard preventive care measures should include:

- ◆ Precautions for insect avoidance;
- ◆ Prescription of emergency treatment kits containing epinephrine;
- ◆ Referral for allergy evaluation.

These preventive measures should help to reduce the health hazards caused by imported fire ant stings.

Your allergist can provide you with more information on fire ant stings.

Red Imported fire Ants

Background

The red imported fire ant (RIFA) is a nuisance, and its sting can cause medical problems. Fire ants can interfere with outdoor activities and harm wildlife. And mounds are unsightly and may reduce land values.

The ants are an established pest in 11 southeastern states, including: Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and adjacent regions in North Carolina, Arkansas, Tennessee and Oklahoma.

Where They Infest

Fire ants commonly infest lawns, schoolyards, athletic fields, golf courses and parks. In these places, they pose a medical threat to people and animals. Their mounds also detract from the aesthetic value of the landscape.

Homes and Building – Fire ants form colonies close to homes and other buildings sometimes forage indoors for food and moisture, particularly during the hot, dry summer months. Entire colonies occasionally nest in wall voids or rafters, sometimes moving into buildings during floods. They are a nuisance and can threaten sleeping or bed-ridden individuals and pets.

Home Gardens – Ants occasionally feed on vegetable plants in home gardens. The worst damage usually occurs during hot, dry weather. Ants may also be a nuisance to gardeners during weeding and harvesting.

Electrical Equipment and Utility Housings – Like many other ants, fire ants frequently infest electrical equipment. They chew on insulation and can cause short circuits or interfere with switching mechanisms. Air conditioners, traffic signal boxes, and other devices can be damaged. Fire ants also nest in housings around electrical and utility units. The ants move soil into these structures, which causes shorting and other mechanical problems.

Compost Piles, Mulched Flower Beds, Pavement Cracks, etc. – Fire ants invade compost piles and mulched flower beds seeking warmth and moisture. They also nest under cracked pavement, removing dirt from underneath sidewalks and roadways and aggravating structural problems. Colonies in these sites may be difficult to locate.

Around Bodies of Water – Fire ants require water to survive and are often found near creeks, run-off ditches, streams, rivers, ponds, lakes and other bodies of water. If surface water is unavailable, they tunnel down to the ground water table many feet below the ground.

Fire Ant Biology

Red imported fire ant colonies consist of the brood (eggs, larvae and pupae) and several types of adults:

1. Winged males (distinguished from the females by their smaller heads and black bodies);
2. Red-brown winged females;
3. One or more queens (wingless, mated females); and
4. Workers

Worker ants are wingless, sterile females. They protect the queen by defending the nest from intruders, by feeding the queen only food the workers have eaten first, and by moving the queen from danger. They also forage and care for the brood.

The winged ants – or reproductives – live in the mound until their mating flight, which usually occurs in the afternoon, soon after a rainy period. Mating flights are most common in the spring and fall. Males die soon after mating, while the fertilized queen alights to find a suitable nesting site, sheds her wings, and begins digging a chamber in which to start a new colony. Sometimes several queens can be found in a single nesting site.

A newly-mated queen lays about a dozen eggs. When they hatch 7 to 10 days later, the queen feeds the larvae. Later on, a queen fed by worker ants can lay up to 800 eggs per day. Larvae develop in 6 to 10 days, and then pupate. Adults emerge from the pupae in 9 to 15 days.

The average colony contains 100,000 to 500,000 workers and up to several hundred winged ants and queens. Queen ants can live seven years or more, while worker ants generally live about five weeks, although they can survive much longer.

The ants build mounds in almost any type of soil, but prefer open, sunny areas such as pastures, parks, lawns, meadows and cultivated fields. Mounds can reach 18 inches in height, depending upon the type of soil. Often mounds are located in rotting logs, and around stumps and trees. Colonies can also be found in or under buildings.

Colonies frequently migrate from one site to another. The queen needs only about six workers to start a new colony. They can develop a new mound, several hundred feet away from their previous location, almost overnight.

Medical Problems

Fire ants are aggressive and will defensively attack anything that disturbs them. They can sting repeatedly. After firmly grasping the skin with its jaws, the fire ant arches its back as it inserts its rear-end stinger into the flesh, injecting venom from the poison sac. It then typically inflicts an average of seven to eight stings in a circular pattern. Fire ant venom is unique because of the high concentration of toxins, which are responsible for the burning characteristic of such stings.

Symptoms of a sting include burning and itching, which usually subsides within 60 minutes. This is followed by the formation of a small blister at the site of each sting, within the next four hours. And, a white pustule forms in a day or two. Treatment is aimed at preventing secondary bacterial infection, which may occur if the pustule is scratched or broken.

Although the stings are not usually life threatening, they are easily infected and may leave permanent scars. On rare occasions, anaphylaxis – or a generalized, systemic allergic reaction to the fire ant stings – can occur, and may be life threatening. It usually occurs in persons sensitized by a previous sting. It may be manifested by flushing, general hives, swelling of the face, eyes, or throat, chest pains, nausea, severe sweating, loss of breath, serious swelling or slurred speech. If this occurs, the person should immediately seek emergency medical assistance.

Treatment – Elevate the extremity and apply ice or a cold compress to reduce swelling and relieve pain. Clean blisters with soap and water to prevent secondary infection. Do not break the blister. Topical steroid ointments and oral antihistamines may relieve the itching associated with these reactions. Treatment with antihistamines and oral steroids may be useful in severe cases.

Avoiding Medical Problems – Tips for avoiding medical problems include:

1. Fire ant allergic patients should wear closed-toed shoes, socks, and gloves when gardening, and take other precautions to avoid stings;
2. Fire ant mounds near the home should be identified and treated with an ant bait insecticide; and
3. Teach children about fire ants and their hazard. These preventive measures should help reduce the health hazards caused by fire ant stings. Your allergist can provide you with more information on fire ant stings.

This fact sheet was prepared by the California Department of Food and Agriculture, with supplemental information provided by the Texas Agricultural Extension Service.

For more information on the Red Imported Fire Ant, visit CDFA's website at: www.cdfa.ca.gov, or call CDFA Public Affairs at: 916-654-0462.