The Brown Recluse Spider – Guilt by Reputation

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In recent years the public has become concerned about the brown recluse spider, Loxoceles reclusa. The notoriety associated with this spider results from the bite, which is usually painless but may become swollen, red, and tender. In some cases, the wound may develop into a large necrotic ulcer which can leave a disfiguring scar. In fact, this potentially dangerous arachnid may be falsely accused of being the culprit in many of the spider bite cases reported in Northern California. The absence of brown recluse spider in this geographic region, the lack of actual specimens associated with specifically reported bites, the potential misidentification of the arachnid, and the possible medical misdiagnosis of the developing wound suggest that the brown recluse spider may be incorrectly blamed as the cause.

The brown recluse spider occurs throughout the south central and Midwestern United States. Other species of Loxoceles (recluse spiders) are found in the southwestern U.S. and southern California. Most of the reports of brown recluse spider bites in California are from the San Francisco Bay Area and Sacramento, which are far removed from its known area of distribution. Richard Vetter, a staff research associate from UC Riverside and internationally recognized spider expert, has reviewed more than 40 years of records and found fewer than ten verified identifications of the brown recluse spider in California. Most of these identified specimens were found in facilities which housed goods imported into the state. To date, no known populations of brown recluse spiders occur in California.

The spider varies in size, but a typical adult including leg span is about the size of a quarter. The body ranges from tan to brown in color and the legs and abdomen are always solid and do not have any patterns, mottling, stripes or bands. The legs are covered with fine hairs and never with stout spines found in other types of spiders. A frequently used diagnostic characteristic is the violin-shaped marking on the cephalothorax (head area) with the base of the violin near the front of the spider and the neck of the violin pointing backward. According to Vetter, the problem with the violin pattern is that other markings can be mistaken for this pattern by non-arachnologists. The most reliable diagnostic characteristic is the presence of only six eyes arranged in three pairs, in contrast to most spiders that typically have eight eyes arranged in various configurations. The eye pattern can only be reliably observed under magnification. Physicians, public health personnel and even entomologists have been known to misidentify this species. Up through 2004, Vetter had received almost 1,700 suspected brown recluse spider specimens for identification, and it turned out that they actually belonged to 36 different spider families.

The natural habitat of the brown recluse is outdoors beneath logs, woodpiles, rocks and debris. The spider is also found indoors in garages, sheds and living areas with humans. Its occur in corners and crevices, behind furniture, in clothing hanging in a closet, shoes, stacks of newspapers or magazines, and bedding. The arachnid can withstand extreme temperature variations of winter cold and summer heat and can survive for months without food or water. The spider is nocturnal, hunting for live and dead insects. It does not use webs to catch food, so webbing found indoors or on vegetation outdoors is most likely from other types of spiders. Typically, the brown recluse spider hides in dark, secluded places during the day. The spider may line its hiding places with webbing to use for egg sacs. Although adult females stay close to these locations, the more mobile males and older immature spiders may wander further away and seek refuge in shoes, bedding or clothing during the night hours.

The brown recluse spider is not aggressive. Most bites are the result of the spider being accidentally pressed up against when someone puts on an article of clothing or a shoe where the spider is hiding, or when one rolls onto a spider in the bedding. Initially, the bite is painless but it may become swollen, red or tender three to eight hours later. In the majority of cases, the bite is localized and heals on its own within three weeks. In some cases, the wound may develop a necrotic lesion, with discoloration, irregular edges, and a pale center surrounded by a red area like a bull's eye. The venom kills the tissue in the surrounding area, causing a necrotic ulcer up to several inches across. This wound can last for several months and leave a deep, disfiguring scar. In rare cases, bites can cause fever, chills, dizziness, vomiting and a rash. The most severe reactions occur in young children, the elderly and those with compromised immune systems. If one is bitten by a brown recluse spider, apply ice, elevate the affected limb or area and get medical treatment immediately.

Even if brown recluse spiders are present, they rarely bite humans. A UC Riverside study showed that no brown recluse spiders have ever been caught in cases where they were suspected of biting humans in regions outside their known distribution area. When a habitat is conducive to brown recluse spiders, they tend to occur in the dozens, not individually. In a study of a Kansas family of four, over a six month period the mother caught and submitted 2,055 suspected brown recluse spiders to Vetter for identification. Yet even in the presence of such large numbers of this potentially dangerous spider, not one family member or pet had been bitten in the eight years that they had occupied the house.

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Brown recluse spider bites can result in a necrotic wound, however, Vetter believes that many of the suspected wounds are actually misdiagnosed and can be attributed to other arthropods or pathogens. It is difficult even for doctors to diagnose a brown recluse spider bite just based on the wound. Lesions which look similar can be caused by several arthropods that feed on mammal blood including fleas, assassin bugs, bedbugs, and ticks. Also, the bites of other spider species can cause necrosis of the tissue. Although toxins in spider venom can cause wounds, these can also be the result of secondary infection when the victim scratches the affected area. In addition, bacterial and fungal infections, gangrene, and ulcers from diabetes or bed sores can appear similar to necrotic wounds from recluse spider bites. Of particular concern is Lyme disease which is transmitted by ticks. The bite results in a bull's eye shaped wound which is also diagnostic of the brown recluse spider bite. Since the course of treatment for a brown recluse bite is antibiotics and is different from that of Lyme disease, misdiagnosis and incorrect treatment could result in irreversible complications of the nervous system and heart.

Vetter makes a compelling argument that medical personnel in California may be over diagnosing necrotic wounds due to brown recluse spider bites. Because the occurrence of the brown recluse spider in California is extremely rare and there are no established populations, they need to consider other causal agents including other blood feeding arthropods, bacteria, viruses, and fungi. As Vetter states, "…It comes down to the simple premise that in order to have brown recluse spider bites, you must first have lots of brown recluse spiders."