

# A Painful Isolated Skin Lesion on a Man's Shoulder

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A 74-year-old man presented for evaluation of a painful skin lesion over his right scapula. The pain and inflammation in the area had worsened since he had first noticed it 5 days prior, and in the past 48 hours, when viewing the lesion in a mirror, he had noted progressive deterioration from a red, swollen area to a lesion featuring central purple-black discoloration with ulceration. There had been no drainage of purulent material. The intensifying pain coupled with the skin changes prompted his seeking medical attention.

He was otherwise quite healthy and quite vigorous for his age. He enjoyed outdoor activities such as hiking, yardwork, and playing competitive softball in various senior leagues. He denied having diabetes, congestive heart failure, or chronic obstructive pulmonary disease, and he was a nonsmoker.

Physical examination revealed normal vital signs—he was and had been afebrile. A lesion of 15 cm in diameter was present over his right scapula. The lesion was basically round, with the central 2 cm being deep purple-black, with ulceration and eschar formation present. The swelling, inflammation, and color faded as one observed from the lesion's center to its periphery. No other lesions were present anywhere else on the body.

Detailed questioning later revealed that he had traveled from his home near Philadelphia, Pennsylvania, to Cincinnati, Ohio, in the previous week to help a relative empty a house and shed prior to moving, and the symptoms and lesion had first appeared while he was there.

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Based on the history and physical examination findings, which one of the following is the most likely diagnosis?

- A. Brown recluse spider bite
- B. Lyme disease
- C. Herpes zoster (shingles)
- D. Black widow spider bite

WHAT'S THE TAKE HOME?

PEER REVIEWED

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## **Answer: A, brown recluse spider bite is the most likely diagnosis.**

The patient's case described here is authentic—he is a friend with whom I have participated in senior softball for many years. I obtained the history myself, and I had the opportunity to personally observe the lesion over a 2-week period.

When I conceived the idea of preparing this case, I thought it would be rather straightforward. Not until I began to dig into the literature did I realize that quite a bit of controversy is attached to bites of the brown recluse spider.<sup>1-3</sup> I will make the case that this was the culprit in this patient's case, and that **Answer A** is the optimal answer of the choices offered. Additionally, I will use this case as a springboard for a wider discussion of arthropod bites.



**Figure:** Dorsal view of a brown recluse spider. Note the characteristic violin-shaped marking on its dorsal cephalothorax. (CDC/ Margaret Parsons)

As anyone who has ever had a mosquito bite or a fly bite knows, a wide variety of ubiquitous arthropods are capable of inflicting bites on humans. Usually, the bites are simply a nuisance, with local reactions of swelling and itching that quickly pass. However, some arthropod bites, such as those of the black widow spider and the brown recluse spider, include envenomation that can result in far more serious local and/or systemic sequelae. Many other arthropods are capable of transmitting serious human diseases, such as the Lyme disease associated with tick bites and the dengue associated with mosquito bites.

The 2 most important identifying characteristics seem to be the precise nature and symptomatology of the wound immediately and in the following days, and time and place—that is, the time of year when the bite occurred, and where it occurred geographically.<sup>4,5</sup> Most authorities are quite dogmatic that nothing can be assumed let alone definitively diagnosed without quite literally having the arthropod in a jar to show the physician, or observing the bite occur directly and counting the eyes of the spider!<sup>4</sup> In the real world, these maneuvers are usually impossible, so let us address more conveniently usable diagnostic clues.

Turning first to brown recluse bites, the arachnid in question is *Loxosceles reclusa*, which is identifiable as a brown, long-legged spider with inverted violin markings on its dorsal thorax (**Figure**). And, this spider has 3 pairs of eyes (rather than the 4 pairs of most spiders) in those

uncommon situations where such observation is possible—which is no more than 10% of the time.<sup>4</sup> There is a table-pounding stack of literature indicating that geography is the diagnostic key. That is, the native range of brown recluse spiders is the South Central United States, and such a bite “essentially does not occur beyond the spiders’ usual habitat.”<sup>4</sup> The brown recluse bite can be nasty, and it usually results in a single lesion with significant local pain, redness, and swelling. In approximately 10% of cases, skin necrosis in the center of the wound with formation of a black eschar complicates the bite. Happily, as occurred in our patient’s case, conservative wound care (in contradistinction to more-aggressive surgical debridement) is adequate to achieve healing with minimal scarring in the vast majority of cases.<sup>5</sup> Seeing such central necrosis formation in our patient’s case and reading the literature about the brown recluse spider’s endemic area created confusion and prompted deeper questioning about his travel, which revealed the correspondingly timed trip to Southwest Ohio, an area within the brown recluse’s geographic range. In our opinion, this reasonably confirms the diagnosis here.

When any type of localized rash appears in the spring and summer months in the Northeastern United States, Lyme disease—infection with the spirochete *Borrelia burgdorferi*, which is transmitted via the bite of the deer tick, *Ixodes scapularis*—must always be considered. The classic bull’s-eye rash, erythema migrans, is pathognomonic, but less-typical lesions frequently occur. However, as a rule, Lyme disease is not associated with the degree of pain seen in our patient’s case, and necrosis is rarely if ever seen,<sup>6</sup> making **Answer B** unlikely. Most Lyme disease rashes totally resolve in approximately 3 weeks.<sup>6</sup>

The black widow spider, *Latrodectus mactans*, envenomates with a neurotoxin. This spider also has classic markings—the red hourglass on the ventral abdomen—and a far more ubiquitous geographic range than the brown recluse. The black widow’s bite typically can cause immediate local pain at the site, but localized or generalized severe muscular pain and spasms occur within an hour of the bite and last from 48 to 72 hours, with the extent related to the degree of envenomation and the location of bite.<sup>5</sup> Our patient’s case had none of these features, making **Answer D** unlikely.

The painful lesions of herpes zoster (shingles) begin as vesicular lesions in the mapping of a dermatome. The vesicles ulcerate secondarily, and thus herpes zoster can present as ulcer lesions if the initial vesicles are missed. The patient in the case presented here is in the correct age group for herpes zoster, but his was a single lesion that crossed multiple dermatomes of the shoulder and upper back, making **Answer C** very unlikely here.

## **PATIENT FOLLOW-UP**

Appropriate local wound care with wound cleansing and minor debridement was performed in an outpatient setting over the ensuing 2 to 3 weeks, leading to slow healing. All culture test results were negative for bacterial pathogens such as methicillin-resistant staphylococci or

Results were negative for bacterial pathogens such as methicillin-resistant staphylococci or streptococci, and antibiotics were not administered. No other lesions occurred locally or elsewhere on the body, and since the initial presentation to the physician was more than 72 hours after the development of the lesion, no antivirals were prescribed. Results of an immunoglobulin M assay for Lyme disease were negative, as well.

## What's the Take Home?

The case presented here represents a primer on arthropod bites. Most frequently, another cause such as bacterial infection turns out to be the true diagnosis, and great care must be taken to not miss lesions such as those associated with methicillin-resistant staphylococcal infection. When an arthropod bite becomes the most likely consideration, geography, time of year, physical findings, and symptoms are extremely helpful in matching the situation to the optimal therapies, since the “holy grail” of actual arthropod identification and demonstration is rare indeed. And, in an era of frequent and extensive travel, epidemiologic patterns associated with various arthropod bites may be less ironclad than had been previously reported.

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