

## SPIDERBITE

Ayana Cannon, MD

### Introduction

In North America alone, there are more than 3,000 species of spiders. While most are harmless, several species including the *Latrodectus* (black widow), *Atrax* (funnel-web), and the *Loxosceles* (brown recluse) have been known to inflict varying degrees of injury to humans. While an overwhelming majority of spider bites may go unnoticed, others result in local skin reactions, necrotic cutaneous lesions, or a severe syndrome associated with hemolysis and death.

While proper identification of spider bites is paramount to the prevention of rare, life-threatening systemic reactions, their misdiagnosis can be equally hazardous. According to the literature, *Loxosceles reclusa* bites are more frequently being mistaken for community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) infections, due to the similarity of their classic lesion appearances. With the incidence of CA-MRSA infections increasing, it is vital for members of the healthcare community to effectively differentiate these lesions to prevent delays in proper care. Complications resulting from improper treatment of both CA-MRSA infections and spider bites may be devastating.

### Case Report

A 41 year-old man presented to the emergency room with a one-week history of multiple, painful bumps on his left and right forearms, accompanied by fever and chills for two days. One day prior to the onset of his symptoms, the patient reported receiving a shipment of sheet metal from Chicago, Illinois at the construction company where he is employed in New Jersey. Upon opening the large cardboard boxes, he noticed 3 large, dark brown, spiders scurrying amongst the parcel. Later that night, after returning home, the patient recalls redness and swelling bordering two bumps on his right arm and 1 bump on his left arm. The next morning he presented to an outside hospital emergency department (ED) after awakening to sharp pains in both of his arms. He was evaluated and discharged home with oral trimethoprim/sulfamethaxazole to treat possible MRSA cellulites. The next day, he noticed 2 additional spiders associated with the materials shipped from Illinois, and captured one in a bottle. According to the patient, this spider appeared to be the same as those which he initially observed. The patient continued his antibiotics, but noticed increasing pain and swelling around the lesions on his arms with development of fever 100° F and chills. He again reported to the ED with arachnoid in tow. He had prior medical history of hyperlipidemia, no previous surgical history, reported occasional alcohol use, but denied tobacco and illicit drug use.

Vitals revealed a febrile temperature 101.5° F, mild hypertension 145/87 mm Hg, heart rate regular at 95 bpm, and normal oxygen saturation without respiratory distress. Physical exam

demonstrated two indurated 2.5 x 1 cm erythematous nodules on his right medial forearm that were warm and tender to palpation. The left forearm revealed 1 similar appearing nodule with a 0.5 cm crusted central lesion. Serum laboratory tests revealed an elevated erythrocyte sedimentation rate 33 mm/hr and C-reactive protein 4.20 mg/dl. Complete blood count and metabolic panel were within normal limits.



**Figure 1.** The patient was diagnosed with spider bite, presumptively of the brown recluse type. He was discharged with a one week course of Dapsone 50 mg, to be taken once daily. Within 48 hours, wound cultures obtained from the patient upon presentation grew methicillin-resistant staphylococcus aureus. The patient was contacted and instructed to return to the outpatient clinic for incision, drainage, and subsequent antibiotic treatment.

### Discussion

In recent years, it has been reported that CA-MRSA has become the most frequent cause of skin and soft tissue infections (SSTI's) presenting to ED's in the United States.<sup>2,5</sup> One study, carried out at 11 geographically diverse institutions across the U.S. in August 2004 showed that 99% of SSTI MRSA isolates were characteristic of CA-MRSA.<sup>2</sup> Studies published this year further suggest that the incidence of MRSA infections may be higher than previously believed with rates in 2005 approaching 32% across 9 distinct U.S. communities.<sup>5,6</sup> Among these infections, researchers also found 15.7-22.2% of the isolates to be USA300 pulsed-field type, a characteristic historically associated with CA-MRSA strains.<sup>5</sup> Infection with such a pathogen can lead to serious systemic complications such as bacteremia, septic shock, and serious metastatic infections including endocarditis,

pneumonia, osteomyelitis, and arthritis. Skin lesions due to MRSA classically present as a furunculosis with an area of inflammation around a darker purpuric center with overlying dermonecrosis that is raised from the surrounding skin.<sup>7</sup> The differential diagnosis of such wounds includes *Staphylococcal* or *Streptococcal* infection, cutaneous anthrax, and Lyme disease, among others.<sup>8,9</sup> Although CA-MRSA outbreaks have shown a predilection for certain groups in the past, including prisoners, men who have sex with men, IV drug users, military recruits, and athletes, current data support the notion that CA-MRSA strains are widespread among varying demographic populations and associated with most SSTI's presenting to the ED.

In contrast, reports show that in cases of reported spider bites, up to 80% are eventually found to be from other insects, arthropods or arachnids. It is worthwhile to note that Moran et al report a relative risk of MRSA infection of 2.8 for reported spider bites.<sup>2</sup> In 90% of reported spider bites, no identifiable arachnid is brought in to the physician, and patients rarely remember any sense of actually being bitten.<sup>8</sup> In all, spider bites, particularly those of the *Loxosceles*, are exceedingly uncommon in the United States and rarely, if ever, occur outside of areas where this spider is endemic.<sup>9,10</sup> Isolated, verified cases have also been reported in Arizona, California, the District of Columbia, Florida, North Carolina, New Jersey, Pennsylvania, Washington, and Wyoming, although reports far exceed verified specimens.<sup>10</sup> It is possible that single *Loxosceles* specimens may find conveyance outside of their range by commercial transport, but almost all such examples, including those in Pennsylvania, have been single specimens that die without reproducing or biting a human.<sup>8-11</sup> Furthermore, *Loxosceles* is not an aggressive arachnid and will only bite a human if threatened or pressed against the human's skin by clothing, towels, or bedding. In the face of the paucity of verified cases, the restricted endemic region, and the 'reclusive' nature of *Loxosceles*, the "brown recluse bite" should be near the bottom of the differential for dermonecrotic wounds and in non-endemic regions possibly removed altogether.

## References

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