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Necrotic Wound in a Coonhound



A 3-year-old intact male coonhound mix presented with a 3-day history of lethargy and anorexia.

History. Five days previously, the owners had noted a black scab on the left lateral thorax where there was now a large, open wound. The dog lives outside and is housed in a chain-link run with a doghouse. The clinical signs began in mid July and the dog lives in southern Missouri.

Physical Examination. The dog is quiet, alert, and responsive. Heart rate is 110 beats/min, body temperature is 103.1°F, and respiratory rate is 36 breaths/min. Mucous membranes are pale; capillary refill time is greater than 3 seconds. The dog appears 5% to 7% dehydrated. On the left lateral thorax, there is a large (approximately 2 cm × 8 cm), tear-drop-shaped, necrotic wound.

Laboratory Analysis. A pretreatment complete blood count, serum biochemical profile, electrolyte measurement, coagulation profile, and urinalysis were done. Significant findings are in the **Table**.

Test	Result	Reference Interval
Packed cell volume (mg/dl)	25	59–57
Total protein (g/dl)	8.0	5.8–7.2
Urinalysis	Hemoglobinuria	N/A

ASK YOURSELF ...

- What are the rule-outs for the cause of this patient’s wound?
- What could cause a necrotic wound in addition to related anemia and hemoglobinuria?
- What are the significance of where the dog resides and the time of year?

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Diagnosis: Spider envenomization

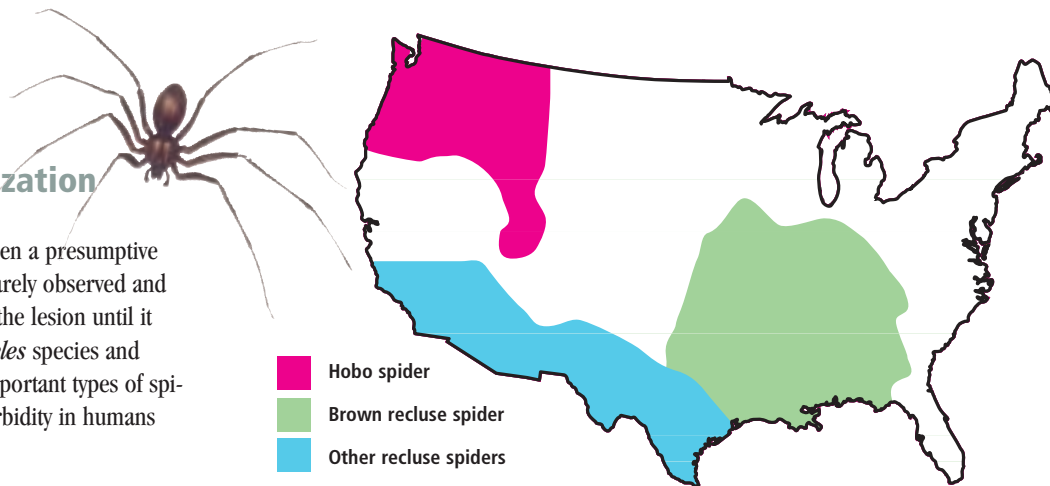
Spider envenomization is often a presumptive diagnosis, as the spider is rarely observed and many owners do not notice the lesion until it becomes advanced. *Loxosceles* species and *Tegenaria agrestis* are 2 important types of spiders capable of causing morbidity in humans and animals.

Mechanism of Action. The venom of both *Loxosceles* and *Tegenaria agrestis* spiders contains many necrotizing enzymes, with sphingomyelinase D potentially being the most important. This enzyme binds to cell membranes and causes migration and activation of host neutrophils, contributing to the local lesion. In the presence of calcium and C-reactive protein, hemolysis can also occur. Local wound infection is a result of host streptococcal or staphylococcal flora. Wound appearance varies with host response and may show evidence of gravitational forces, leading to wounds that are irregular in size and shape.

Treatment. A treatment plan should address local wound care and medical management of any systemic signs. Wound care begins with several daily cleanings with Burow's solution (aluminum acetate in water) until active necrosis is under control and the wound is healing. Some debridement may be necessary, although complete surgical excision is generally disappointing as most veterinary patients are not presented for care until the wound is well advanced.

DID YOU ANSWER...

1. A nonhealing wound due to trauma, necrotizing bacterial infection, or spider bite from a *Loxosceles* species or *Tegenaria agrestis* spider.
2. The anemia and hemoglobinuria are probably related to a *Loxosceles* spider bite, as the venom can cause hemolysis.
3. *Loxosceles* spiders are found in the south and south central states and are active in the warm months of the year.



Broad-spectrum antibiotics are indicated and should address the local bacteria most likely to cause infections. Dapsone, a leukocyte inhibitor, may be effective in treating dermal lesions. A dose of 1 mg/kg PO once daily for 14 days has been suggested. Corticosteroids have protective effects on the red blood cell membrane, inhibiting hemolysis. A dose of 1 to 2 mg/kg per day can be used for the first 5 days of treatment. NSAIDs are contraindicated if the patient is receiving corticosteroids, so an opioid pain medication, such as tramadol (1–4 mg/kg PO Q 8–12 H) or buprenorphine (0.01–0.03 mg/kg SC or PO Q 6–12 H), may be used for pain control early in therapy.

After the course of corticosteroids is complete, the dog can be given NSAIDs if pain control is still required. Hyperbaric oxygen therapy has been shown to promote wound healing, and placing the patient in 1 to 2 atmosphere Q 12 H for 3 to 4 days may be effective. However, this treatment is probably only available at large referral or teaching institutions. Dogs with systemic signs should be treated as needed with IV fluid therapy at twice the maintenance rate to protect renal function, and blood transfusions may be necessary. Wound healing may be impaired if hematocrit is less than 15%, and that measurement combined with heart rate, blood pressure, and oxygen levels that are inappropriately low may indicate a need for a transfusion of packed red blood cells. Complete recovery is expected, but the wound may take weeks to months to heal.

Discussion. *Loxosceles* spiders are typically dark brown to tan and have a violin-shaped mark on the back of the cephalothorax. They

have 3 pairs of eyes and can range in length from 6 to 20 mm. The legs are long and slender, and the body is flat. They are usually nocturnal, hide their webs, and are not typically seen, but can be found in many undisturbed places. Depending on environmental temperature, they may live outdoors or in barns, basements, attics, or storage areas.

These spiders are native to South, Central, and North America. In the United States, *Loxosceles reclusa* (also known as the brown recluse, or fiddle back spider) can be found in the south and south central states from Georgia through Texas and as far north as southern Wisconsin. Other species of *Loxosceles* include *L. rufescens*, *L. deserta*, and *L. arizonica*.

Tegenaria agrestis, also known as the hobo spider, was introduced to the Seattle area from Europe in the 1930s. The venom of these spiders is similar to that of *Loxosceles* spiders, and the clinical appearance of the bite wound is also similar. The hobo spider shares many characteristics with the recluse spider. It also has a brown to rust-brown color and long, slender legs. Instead of the violin marking, it has a herringbone pattern on the abdomen. The hobo spider lives outdoors around storage or outbuildings and can also be found in basements. They are poor climbers and are most likely to live at ground level. After introduction to the Seattle area, the hobo spider expanded its range throughout the Pacific Northwest, into Utah and even southern Alaska. Hobo spiders are especially active in the summer months, which is mating season. ■

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