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Maryland Poison Center
UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

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The Maryland Poison Center's Monthly Update: News, Advances, Information

Black Widow Spider Bites

Black widow spiders *(Lactrodectus mactans)* are nocturnal, non-aggressive spiders that inhabit much of the United States, including Maryland. U.S. poison centers were consulted on 1,631 bites in 2015; 45% were treated in a health care facility. Each year, the Maryland Poison Center receives about 10 black widow spider bite calls.

Black widow spiders are commonly found in dark environments such as debris piles, woodpiles, garages, outbuildings, and under rocks. They are very easy to identify; the adult female spider is shiny black with a red (sometimes yellow or orange) hourglass marking on the underside of her globose abdomen. The body is about 1.5 cm in length with a span (including legs) of approximately 3 cm. The spider hangs upside down on her irregular, tangled web so that the hourglass marking is visible to predators. The adult male is half the size of the female and has red or yellow bands or spots on its back. Only bites from females result in envenomation in humans. The extremely potent venom consists of several proteins and enzymes that cause neurologic and autonomic effects. The primary toxin, alpha-latrotoxin, causes the opening of cation channels (including calcium channels) leading to an increase in the release and depletion of neurotransmitters such as acetylcholine and norepinephrine.

Local effects at the bite site range from tiny puncture marks and mild erythema to a target-like lesion with central blanching and an outer erythematous ring. There is little or no pain when the bite occurs; however, muscle pain and cramps begin near the site within 30-120 minutes. Within 3-4 hours, the pain worsens and progresses to the abdomen, back, thigh, and chest. Muscle spasms and rigidity often occur. Other clinical effects may include anxiety, weakness, hyperreflexia, headache, nausea, vomiting, diaphoresis (either local to the bite area or generalized), excessive salivation and dyspnea. Tachycardia and hypertension are common but rarely cause hemodynamic instability. Permanent disability and death are rare. Unlike bites from the brown recluse spider, black widow spider envenomation does not result in tissue necrosis.

Many patients are able to be treated at home with local wound care, analgesics and muscle relaxants (e.g. benzodiazepines). Symptoms typically resolve within 12-72 hours after the bite. Antivenin (*Lactrodectus mactans*) is reserved for patients with life-threatening effects (usually children, the elderly or those with comorbid medical conditions) or symptoms not relieved by analgesics and muscle relaxants.

Lisa Booze, PharmD, CSPI

Did you know?

Black widow spider antivenin is effective but not often administered.

Antivenin has been shown to relieve pain and reduce symptoms within 30 minutes after administration; therefore, it may be indicated when standard therapy fails (*Ann Emerg Med 1992;21:782–7. J Toxicol Clin Toxicol 2001;39:125–7*). However, it is not without risk. Antivenin is derived from horse serum. Although rarely reported, there is a risk for immediate (anaphylactic) or delayed (serum sickness) hypersensitivity reactions (*J Med Toxicol 2011;7:317-21. Am J Emerg Med. 2012;30:836. Clin Toxicol 2012:50: 70–73*).

In addition, the availability of Antivenin (*Lactrodectus mactans)* is limited. Two vials may be obtained from the manufacturer *(Merck & Co., Inc.)* on an emergency case-by-case basis.

Call the poison center for assistance with the management of black widow spider bites.

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