

Cutaneous Reactions to Triatomine (Kissing Bug) Bites and the Risk for Chagas Disease

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PRACTICE POINTS

- Triatomine bugs, commonly known as kissing bugs, are widespread, especially in warmer climates, and their geographic range is expanding.
- The Romaña sign, characterized by unilateral swelling of the eyelid, is common in triatomine bites.
- Triatomine bugs are the primary vector for transmission of the parasite *Trypanosoma cruzi*, the causative agent of Chagas disease.
- In recent years, *T cruzi* has been detected in triatomine reduviids in suburban areas of the southwestern United States.

Triatomine bugs are widely distributed globally and are important vectors of trypanosomiasis in the New World. The Romaña sign, characterized by unilateral swelling of the eyelid, is common in triatomine and bedbug bites. The range of *Trypanosoma cruzi*, the cause of Chagas disease has expanded with the organism detected in triatomine reduviids in suburban areas of the southwestern United States.

Triatome bugs cause painful bites and serve as vectors for Chagas disease. In this article, we will address diagnosis and vector identification.

Key Morphologic Features

Insects from the subfamily Triatominae are identifiable by their long legs and a shieldlike abdomen behind a platelike pronotum that covers the thorax. Their

half-membranous wings overlap, covering the central abdomen but leaving the lateral portions visible. Tigerlike stripes are characteristically prominent on the visible portions of the lateral abdomen. The stalklike head has an articulated beaklike mouth that can be retracted and used to deliver a powerful bite (Figure 1).

Feeding Mechanisms and Host Reactions

Triatome bugs are blood-feeding arthropods that hide in cracks and crevices in domestic structures by day and feed at night. They are shy feeders, and laboratory colonies have been known to die rather than feed in daylight. They are particularly common in thatched or wattle-and-daub dwellings, where they can be present in great numbers and descend on sleeping inhabitants at night.

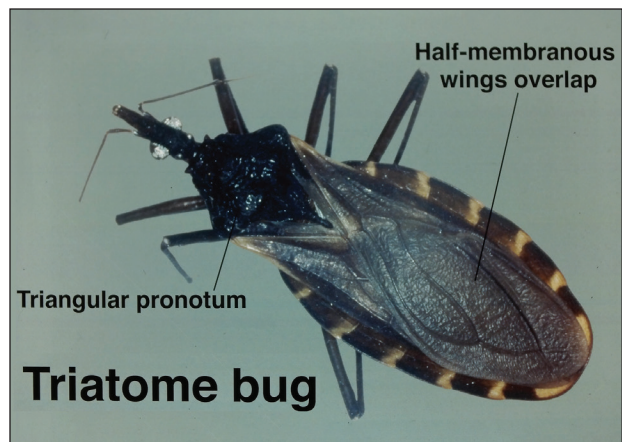


FIGURE 1. *Triatoma infestans* (kissing bug).

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Triatome bugs require regular blood meals throughout the 5 developmental nymph stages in order to undergo successful molting.

In the wild, triatome bugs feed on a range of animals with little specificity, but in domestic settings they feed largely on humans. Thermosensors in the antennae help them locate blood vessels under the skin, which they penetrate easily due to their long mouthparts. Like other blood-sucking arthropods, they release an anticoagulant that facilitates continuous blood flow while feeding, which accounts for many of the cutaneous reactions observed after the host sustains a triatomine bite.¹

Triatomine bugs have trouble feeding through clothing and seek out exposed skin, particularly the eyelids, producing the characteristic unilateral eyelid swelling known as the Romaña sign. Other bite reactions include purpura; macular erythema; and vesiculobullous, papular, and urticarial lesions (Figure 2).² Associated lymphangitis or lymphadenopathy may be noted, and anaphylaxis has been reported. Similar to those of cockroaches, triatome antigens have been associated with atopic dermatitis and asthma.³

Chagas Disease Risk and Transmission

Triatomine reduviids are the primary vector of Chagas disease, and the geographic range of both continues to expand, particularly in North America. The disease remains endemic in Latin America, with the highest incidence now reported in Brazil.⁴ An estimated 240,000 to 350,000 individuals in the United States are infected, primarily immigrants from Mexico, Central America, and South America; approximately 30% of those infected will develop cardiac and/or gastrointestinal complications.⁴ If left untreated, Chagas disease leads to autonomic ganglion destruction and subsequent gastrointestinal and cardiac complications, including megacolon, dilated cardiomyopathy, and heart failure.⁵

Trypanosoma cruzi, the microorganism responsible for Chagas disease, is spread to humans through triatomine fecal matter scratched into the bite wound.⁶ Triatomine bugs have a highly developed gastrocolic reflex and defecate liberally as they feed. Fecal volume is heavily dependent on species and sex, with fifth-stage female nymphs producing the highest volume of excrement and thereby acting as particularly adept disease vectors.⁶ *Triatoma infestans* and members of the genus *Mepraia* are key vectors of *T. cruzi*.¹ In areas of South America where populations of *T. infestans* are controlled through public health measures, *Mepraia* emerge as a largely uncontrolled disease vector.^{1,7} While endemic to the southern United States and South America, *T. cruzi* has spread to much of North America and Europe by way of Triatominae as naturalized or invasive species.⁸

There are 3 phases of Chagas disease: acute, indeterminate, and chronic. A chagoma is a localized erythematous swelling at the site of the bite. The acute phase often



FIGURE 2. Reaction from a triatome bite, showing erythema and induration.

lacks systemic symptoms but may include fever, myalgia, and headache. The intermediate phase may include fatigue and recurrent fevers. The most serious manifestations occur in the chronic phase and include cardiomyopathy with signs of congestive heart failure, irregular heartbeat, cardiac arrest, abdominal pain, constipation, and dysphagia.

Deforestation has been identified as a driving factor in the spread of Chagas disease, as the disease vectors shift from wilderness areas and animal hosts to inhabited areas where humans are the most readily available food source. Triatome bugs in areas experiencing higher levels of development or forest harvesting are forced into human-populated areas. As a result, instances of Chagas disease are on the rise in these communities.⁷ Salvador, Bahia, Brazil, has been identified as one such target of increased vector presence due to heavy deforestation, and the hottest months were identified as having the greatest threat of vector exposure.⁹ Brazil became the leading geographic area for the disease partly because of heavy loss of forested land.¹⁰

Vector Control and Prevention Strategies

Elimination of cracks and crevices in walls; replacement of wattle and daub with stucco, plaster, and other solid building materials; and the use of insecticides with durability in the environment have been used to reduce triatome bug infestation in homes. However, highly persistent insecticides carry greater environmental risk and may drive resistance as declining concentrations select for resistant arthropods. Repellents have less environmental impact and play an important role in vector control. Citronella essential oil has been observed to repel several species of triatome bugs that are common in Arizona; specifically, the component alcohols geraniol and citronellol were found to be effective at inhibiting triatome feeding.¹¹

Early detection of Chagas disease is essential, as end-stage cardiomyopathy and megacolon are difficult to

treat. Newly developed multiantigen testing has shown promising results, suggesting a potential for more accurate testing for Chagas disease.⁸ Geospatial tracking and mapping of *T. cruzi* vectors now are employed to track seasonal vector changes and disease patterns.⁹ Researchers also have developed a dedicated dichotomous key for the identification of triatome bugs endemic in Brazil with the hope of better identification and mapping of disease vector presence and density.¹⁰ The key consists of a series of statements with 2 choices in each step. It uses observable features of the arthropod to lead users to the correct identification.

Final Thoughts

Identification of triatome bugs can help with public health efforts to control the spread of disease. Patients with unilateral eyelid swelling should be evaluated for possible bedbug or triatome exposure.

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