

What's Eating You? Triatome Reduviids

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Triatome reduviids are true bugs from the order Hemiptera (Figure 1).¹ They are variable in size (10–30 mm) with females generally being larger than males. The bugs have several distinguishing features including wings that rest on the back in a fashion similar to a pair of folded scissors (wing tips overlap). The lateral portions of the abdomen are not covered by the wings and are visualized as a series of tan and dark tiger stripes. Adult bugs have 2 sets of wings. The forewings are hard proximally (the corium and clavus) and membranous distally, and are referred to as hemielytra. Another set of wings that are entirely membranous lie beneath the hemielytra. Triatome bugs also exhibit a triangular pronotum, which rests posterior to the head and has a broad posterior base. Separating the triangular pronotum from the hemielytra is a triangular scutellum, which points to the posterior. The antennae are long and thin and are composed of 4 segments; they project from the median of the proboscis. The labium (sucking mouthpiece) is straight and composed of 3 segments.

Triatome bugs, also known as assassin bugs, are nocturnal predators that can feed on other insects, animals, or humans with a painless feeding bite that allows them to enjoy long blood meals while the victim is asleep. They also can produce a painful bite as a defense mechanism, which results in pruritic erythematous swelling from injected toxins. A more severe reaction occurs in patients who have frequent encounters with the bug, as the bug typically hides in wall crevices, furniture, and roofs.

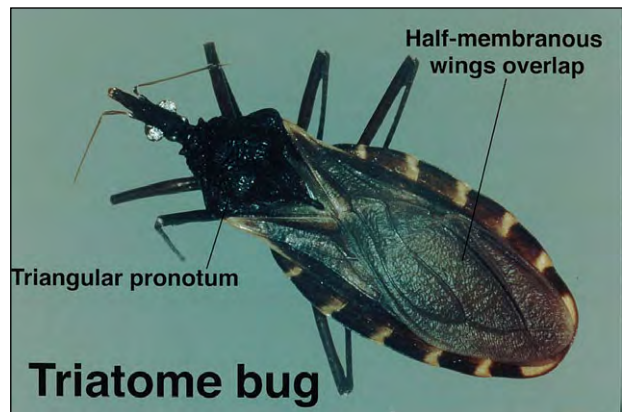


Figure 1. Triatome reduviid.

Figure 2 demonstrates an individual with a high sensitivity to a triatome bite. The patient has actually been the food source for laboratory triatomes for years, demonstrating the marked immune response that can occur with repeated exposure.

In endemic areas, unilateral periocular swelling that occurs from conjunctival swelling secondary to contamination from triatome feces is called Romaña sign or chagoma. The pronounced gastrocolic reflex is responsible for the bug's ability to defecate as it eats.

The bugs may be best known for causing American trypanosomiasis or Chagas disease. It is estimated that 16 to 18 million individuals are affected with the disease and approximately 50,000 individuals die from it annually.² Death typically occurs from myocarditis or less commonly from meningoencephalitis.^{3,4} The disease is characterized by cardiomegaly and megacolon, with central nervous system lesions in immunodeficient patients.⁵ Although the disease can be transmitted by a biting triatome bug, blood transfusion, organ transplantation, or breast milk, the biting organism remains the most efficient modality of infection.⁶ Blood forms of trypanosomes are relatively noninfectious and transform in the gut of triatome bugs to their infectious form.⁷ Prevention of the disease currently is advocated through improving

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Figure 2. Triatome bite.

sanitary conditions in rural areas and using insecticides.⁸ The search for a vaccine remains elusive, but progress is being made with positive results in animal models and DNA vaccines for immunotherapy under study.^{9,10} Treatment currently consists of benznidazole and nifurtimox, which has limited success, especially in patients who are infected long-term.

Triatome reduviids also may play a role in atopic eczema and asthma, as they share antigens with cockroaches that are strongly immunogenic and have been implicated in studies of atopy.¹¹

REFERENCES

1. Elston DM, Stockwell S. What's eating you? triatome reduviids. *Cutis*. 1999;63:63-64.
2. Chagas disease. Seattle BioMed Web site. <http://www.seattlebiomed.org/disease/chagas-disease>. Accessed January 11, 2011.
3. Ochs DE, Hnilica VS, Moser DR, et al. Postmortem diagnosis of autochthonous acute chagasic myocarditis by polymerase chain reaction amplification of a species-specific DNA sequence of *Trypanosoma cruzi*. *Am J Trop Med Hyg*. 1996;54:526-529.
4. Kirchhoff LV. Trypanosomiasis of the central nervous system. In: Scheld WM, Whitley RJ, Marra CM, eds. *Infections of the Central Nervous System*. 3rd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2004: 777-789.
5. Chimelli L, Scaravilli F. Trypanosomiasis. *Brain Pathol*. 1997;7:599-611.
6. Santos Ferreira C, Amato Neto V, Gakiya E, et al. Microwave treatment of human milk to prevent transmission of Chagas disease. *Rev Inst Med Trop Sao Paulo*. 2003;45:41-42.
7. Hoft DE. Differential mucosal infectivity of different life stages of *Trypanosoma cruzi*. *Am J Trop Med Hyg*. 1996;55:360-364.
8. Zerba EN. Susceptibility and resistance to insecticides of Chagas disease vectors. *Medicina (B Aires)*. 1999;59 (suppl 2):41-46.
9. Basso B, Moretti E, Fretes R. Vaccination with epimastigotes of different strains of *Trypanosoma rangeli* protects mice against *Trypanosoma cruzi* infection. *Mem Inst Oswaldo Cruz*. 2008;103:370-374.
10. Dumonteil E, Escobedo-Ortegon J, Reyes-Rodriguez N, et al. Immunotherapy of *Trypanosoma cruzi* infection with DNA vaccines in mice. *Infect Immun*. 2004; 72:46-53.
11. Alonso A, Albónico JF, Rodríguez SM, et al. Cross reactivity between the antigens of *Periplaneta americana* and *Triatoma infestans*. *J Invest Allergol Clin Immunol*. 1996;6:301-306.