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First report of occurrence of *Triatoma williami* Galvão, Souza e Lima, 1965 naturally infected with *Trypanosoma cruzi* Chagas, 1909 in the State of Mato Grosso, Brazil

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ABSTRACT

Objective: To identify and report the occurrence of *Trypanosoma cruzi (T. cruzi)* in naturally infected *Triatoma williami* (*T. williami*) (Hemiptera, Reduviidae, Triatominae) in the state of Mato Grosso, Brazil. **Methods:** The triatomines were spontaneously captured by homeowners into human dwelling in Legal Amazon municipality. Triatomines feces were collected for fresh examination, and specific detection of *T. cruzi* DNA by polymerase chain reaction was carried out. **Results:** The specific characterization of the triatomine infection showed the presence of 30% of the positive insects. **Conclusions:** Our results provide further knowledge on the geographical distribution of *T. williami* in the State of Mato Grosso. It becomes evident the potential risk of recrudescence of vectorial transmission of Chagas disease in Brazil.

1. Introduction

Chagas disease represents the leading cause of cardiac lesions in young, economically productive adults in endemic countries in Latin America[1]. Natural transmission of Chagas' disease occurs by skin contamination with feces of vectors (triatomines) containing infecting forms of *Trypanosoma cruzi* (*T. cruzi*)[2,3]. The geographical distribution of Chagas infection, including its reservoirs and vectors, extend from the Southern United States to Southern Argentina and Chile[4]. Thanks to a coordinated multi-country programme, the transmission of Chagas disease by vectors and via transfusion was interrupted in Uruguay in 1997, in Chile in 1999 and in Brazil in 2006[1]. The goal of this programme was to eradicated vector-borne transmission by the elimination of the main vector in urban area, *Triatoma infestans* (*T. infestans*)[5]. Triatoma bugs, found most often in poor rural households, belongs to the subfamily Triatominae comprising 130 recognized species, of which about a dozen can transmit the trypanosome and some of them may occupy the *T. infestans* niche[6]. Natural environment degradation, with the triatomine displacement of yours primitive wild ecotopes, is that determine the domestic transmission of the disease[7]. Thus, several aspects of studied area contribute to the domiciliation of wild vectors of Chagas' disease. In fact, this work reports a triatomine infected with *T. cruzi* invading human dwellings in Legal Amazon municipality.

2. Materials and methods

The triatomines were spontaneously captured by homeowners into human dwelling in the urban community at the north of the city of Barra do Garças, Brazil (15° 53′24″ S, 52° 15′24″ W). The insects captured were brought alive to the Laboratory of Parasitology of the Federal University of Mato Grosso (UFMT) in the municipality. The species of triatomine was identified by morphological aspects[8]. Triatomines feces were collected for fresh examination and specific detection of *T. cruzi* DNA by polymerase chain reaction was carried out with oligonucleotides complementary to the kDNA minicircle sequence; a 330 bp fragment containing the variable regions of the parasite[9].

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3.Results

Ten specimens of triatomine were identified as *Triatoma williami* (*T. williami*) by morphological aspects. Through microscopic observation we detected moving trypanomastigotes in unstained fresh faecal preparation in three of them. Accordingly, caution should be taken when diagnosing *T. cruzi* based only on microscopic observation. Thus, as showed in Figure 1, we confirmed *T. cruzi* infection by kDNA minicircle sequence amplified at triatoma excreta.

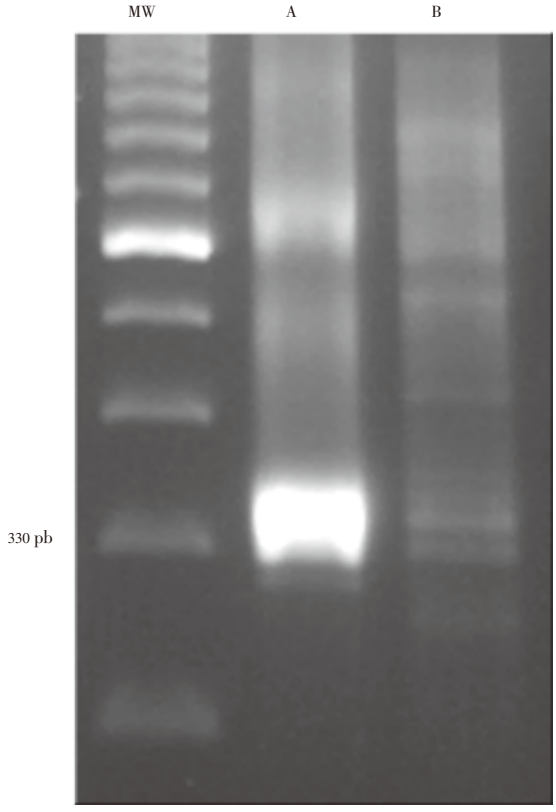

Figure 1. Ethidium bromide-stained 2% agarose gel containing polymerase chain reaction (PCR) products of DNA. Lane MW – the DNA ladder (BRL); Lane A – excreta of the insect; Lane B – negative control condition. The expected 330 bp fragment derived from *T. cruzi* minicircles is shown on the left.

4.Discussion

Despite the relevant achievements in the control of the main Chagas disease vectors *T. infestans*, several factors still promote the risk of infection[10,11]. The current situation in Brazil requires renewed attention due to its high diversity of triatomines species and the irregular occupation and deforestation, causing rapid and drastic environmental changes and increasing the urban invasion by sylvatic species[1,5]. We found out three of ten spontaneously captured *T. williami* infected with *T. cruzi* into human dwelling constructed by the Brazilian National Habitation System that not represents the classical poor house infested with nests of triatomine bugs[5,6]. It becomes evident the potential risk of recrudescence of vectorial transmission of Chagas disease in Brazil.

Conflict of interest statement

We declare that we have no conflict of interest.

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