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# Pathological Features of *Trypanosoma cruzi* Infections of *Rattus rattus*

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**Naturally acquired *Trypanosoma cruzi* infections were studied in *Rattus rattus* kept in the laboratory for intervals from one day to 33 months. *Trypanosoma cruzi* was found at necropsy in the tissues of 85 (51%) of 167 rats kept three months or less, 7 (50%) of 14 rats kept 3 to 12 months, and 5 (24%) of 21 rats kept 12 to 33 months.**

**Myocarditis and meningoencephalitis were the principal pathological lesions present. The pathological lesions of naturally acquired *T cruzi* infections in *R rattus* resemble the lesions of Chagas disease, as it is seen in Panamanians.**

*Rattus rattus* has been found[1] to be an important mammalian reservoir of *Trypanosoma cruzi* in the central Panamanian villages of Bonguito, Mendoza, Santa Rita, and Caimito de Capira where Chagas disease is endemic. Of 100 rats examined, *T cruzi* was found in 55 by microscopic identification of parasites in tissues obtained at necropsy.

Although De Alencar et al[2-4] and Ferriolli and Barretto[5] have identified *T cruzi* in the tissues of naturally infected *R rattus* at necropsy, descriptions of the pathological lesions of natural *T cruzi* infections of *R rattus* were limited to a few observations on a few animals.

The purpose of this paper is to describe and illustrate the pathological lesions of naturally acquired *T cruzi* infections of Panamanian *R rattus*.

## Materials and Methods

Live-trapped *R rattus* from Bonguito, Santa Rita, Mendoza, Caimito de Capira, Chepo, and Chilibre were maintained singly in cages in the laboratory for periods of time ranging from one day to 33 months. Under these conditions, reinfection does not occur.

The rats were examined periodically by thick smear, blood culture, and complement-fixation test for evidence of *T cruzi*. When they died or were killed, necropsies were performed. Blocks of heart, lungs, brain, intestine, stomach, salivary glands, kidneys, liver, spleen, and skeletal muscle were fixed in 4% formaldehyde, solution, embedded in paraffin, and were sectioned at 8μ. Sections stained with hematoxylin-eosin were examined microscopically.

In all, 202 rats were necropsied. Of these, 167 were in the laboratory for three months or less, 14 were in the laboratory 3 to 12 months, and 21 were in the laboratory 12 to 33 months.

## Results

**Prevalence of *T cruzi* Infection.**—Of 167 rats kept in the laboratory less than three months, 85 (51%) were found to be infected with *T cruzi*; 7 (50%) of 14 rats kept in the laboratory 3 to 12 months, and 5 (24%) of 21 rats kept in the laboratory 12 to 33 months were found to be infected with *T cruzi*.

No significant differences in the prevalence of infection by sex were found. Almost all rats examined were adults (males: 225 to 300 gm, females: 125 to 200 gm).

**Distribution of Lesions and Parasites.**—Parasites were found in 97 (49%) of 202 rats. The distribution of the parasites in the infected rats was heart, 96 (99%); brain, 25 (27%); lungs, 15 (15%); kidneys, 4 (4%); liver, adipose tissue, and skeletal muscle, 1 (1%). Chronic, inflammatory infiltrates of plasma cells, lymphocytes, and monocytes were present in the myocardium, cerebellum, skeletal muscle, visceral muscle, and adipose tissue.

**Description of Pathological Lesions.**—In the hearts of three rats necropsied within a week of arrival at the laboratory, numerous parasitized muscle fibers (10 to 12 per microscopic section) were present (Fig 1); more parasitized fibers were observed in the walls of the ventricles than of the atria. In these hearts, inflammation

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