Presence of Amastigotes in the Weber’s Lingual Salivary Gland of Trypanosoma cruzi-Infected Mice

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The authors studied histopathologically the presence of amastigotes in the Weber’s lingual salivary gland of mice infected with RC strain of Trypanosoma cruzi. Amastigotes were found in Weber’s gland acini cells, excretory duct cells, intralobular connective tissue, muscle fibers and inside the acini lumen.

Key Words: Trypanosoma cruzi, mouse salivary gland, mouse tongue

Introduction

The alterations induced by T. cruzi in the salivary glands have been described by Chagas and Villela (1922) in chagasic patients with megaesophagus. In these patients the impairment of free passage of food in the esophagus may cause a reflex stimulation of the salivary glands, with consequent increased production of saliva and hypertrophy of the gland (Correia Neto, 1935; Vieira and Hadler, 1961).

Marsden and Hagstrom (1966) observed pseudocysts in salivary glands of dogs inoculated with a strain of T. cruzi obtained originally from Peru, and indicated that the possibility exists that amastigote nests in close proximity to the salivary ducts could result in trypomastigotes being passed to the saliva.
We undertook a histopathological study showing amastigotes in the parenchyma of the Weber's lingual salivary gland of mice experimentally infected with RC strain of *T. cruzi*.

**Material and Methods**

Ten male albino mice aged 27 days injected intraperitoneally with $2 \times 10^4$ blood trypomastigotes of the RC strain were used. The RC strain, which has polymorphic characteristics and whose blood forms are predominantly large, was isolated from the blood of wood-dog *Cerdocyon thous azarae* from Cassia dos Coqueiros, Brazil, and is being maintained in mice by seriate reinoculation.

The animals were killed under ether anesthesia during the acute phase of infection (12th day of inoculation). The tongues were dissected, cut longitudinally, and immediately immersed in a solution of alcohol 80% (85 ml), formalin (10 ml) and acetic acid (5 ml). After 24 hours of fixation, the material was embedded in paraffin, cut into 6-μ thick sections and stained with H/E for structural study.

**Results and Discussion**

The salivary glands of the tongue of the mouse are located near the base of the tongue and are surrounded by striated muscle. Weber's glands which are arranged in a spherical mass are found in the area of the vallate papillae (Little, 1941) and secretes a glycoprotein complex (Burstone, 1953). Amastigotes were found in Weber's gland acini cells (Figure 1), excretory duct cells, intralobular connective tissue (Figure 2), muscle fibers (Figure 3) and inside the acini lumen.

Rodents infected with Y and Bolivia strains of *T. cruzi* show atrophy (Ribeiro et al., 1977; Utrilla et al., 1982, 1985; Martini et al., 1986) and accelerated acinar development and retarded duct system maturation (Alves and Machado, 1980) of the major salivary glands. Pseudocysts were found in the salivary glands of mice inoculated with Chinga strain from Costa Rica (Bice and Zeledon, 1970), and with Y and CL strains from Brazil (Gonçalves da Costa et al., 1984, 1986). Amastigotes were found in the major salivary gland acini cells, striated duct cells, inter- and intralobular connective tissue, muscle walls of blood vessels, and inside the striated duct lumen of mice infected with Bolivia strain of *T. cruzi* (Martini et al., 1989).

**Conclusions**

These results suggested that trypanosomes might actively gain access to the duct system of the Weber's salivary gland and thus, the oral cavity.
Figure 1 - Weber's lingual salivary glands in *T. cruzi*-infected mice, arrow indicating amastigotes in acini cells. HE (400 X).

Figure 2 - Weber's glands in *T. cruzi*-infected mice. Arrow indicates amastigotes in connective tissue. HE (400 X).
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References

Chagas C, Villela E: Formula cardiaca da Trypanosomiase americana. Mem Int Oswaldo Cruz 14: 3-61, 1922
Little CC: Biology of the laboratory mouse. The Blakiston Co, Philadelphia, 1941


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