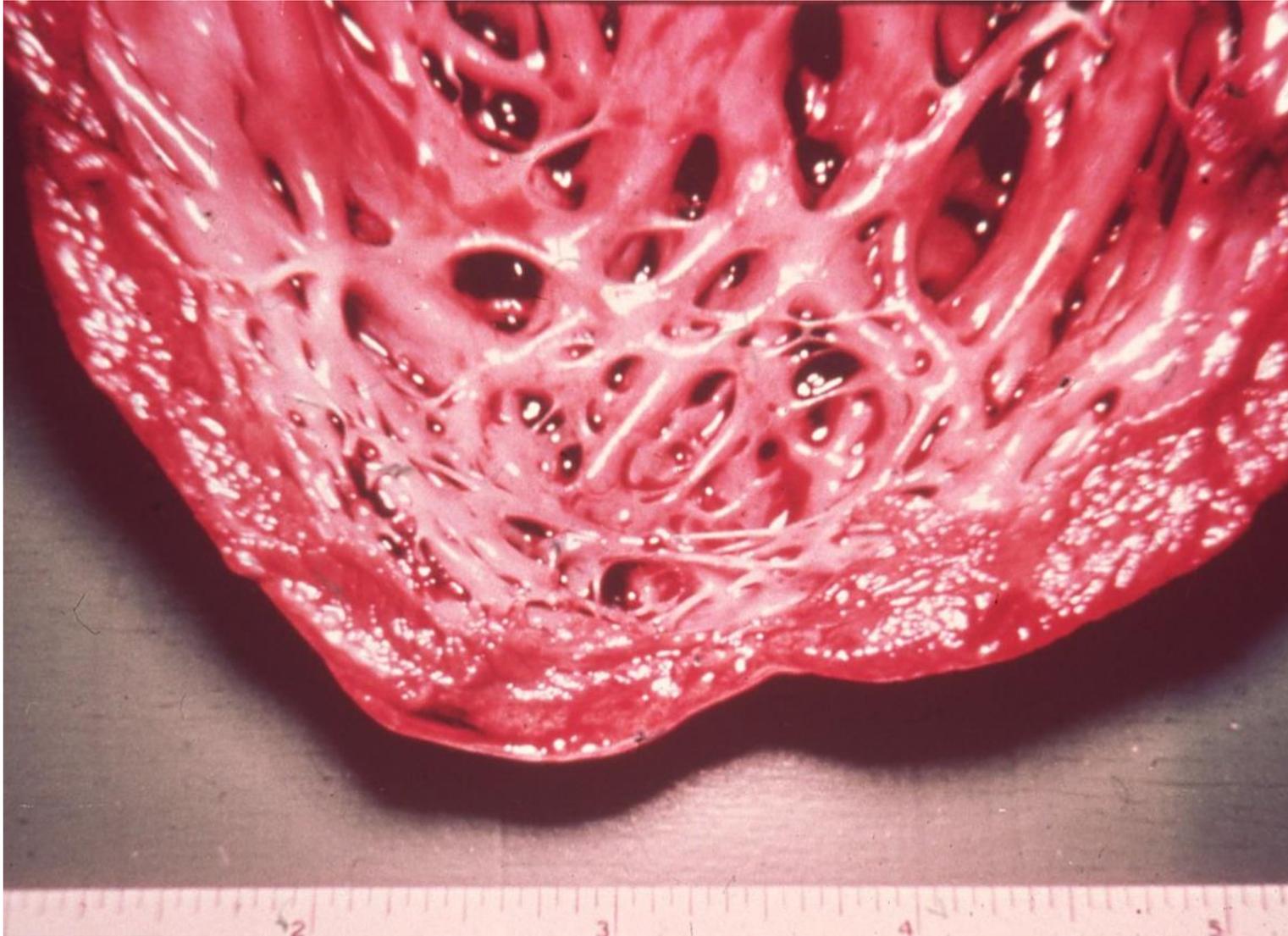


# Chagas disease (American trypanosomiasis)

Chagas disease (American trypanosomiasis) is a tropical protozoan disease caused by *Trypanosoma cruzi*. It is endemic in Central and South American countries, spread by an insect, *Triatoma* nicknamed as “a kissing bug”. The early symptoms are either absent or mild, and may include fever, swollen lymph nodes, headache or swelling at the site of the bite as "Romaña's sign": The eyelid swelling is called as "chagoma". The acute disease lasts for 4-8 weeks. A half of the patients with chronic infection develop chronic heart failure 10–30 years after the initial illness. Some patients may have an enlarged esophagus or an enlarged colon. Chagas disease is a zoonotic disorder seen in both humans and other mammals. *T. cruzi* infects the host by the infected feces through the bite wound of the kissing bug.

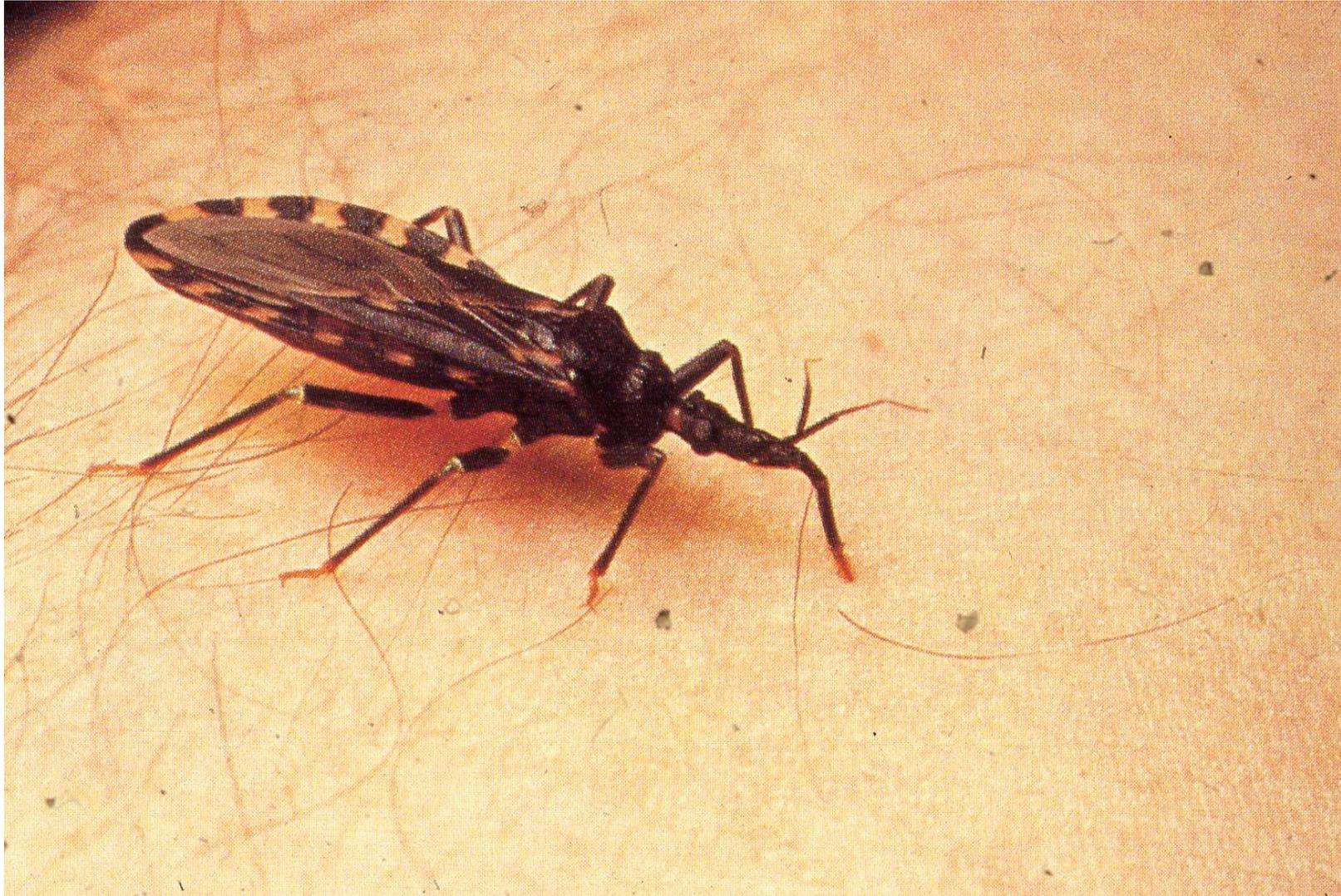
Ref.: Silvestre de Sousa A, et al. Chagas disease. Lancet 2024; 403(10422): 203-218. doi: 10.1016/S0140-6736(23)01787-7



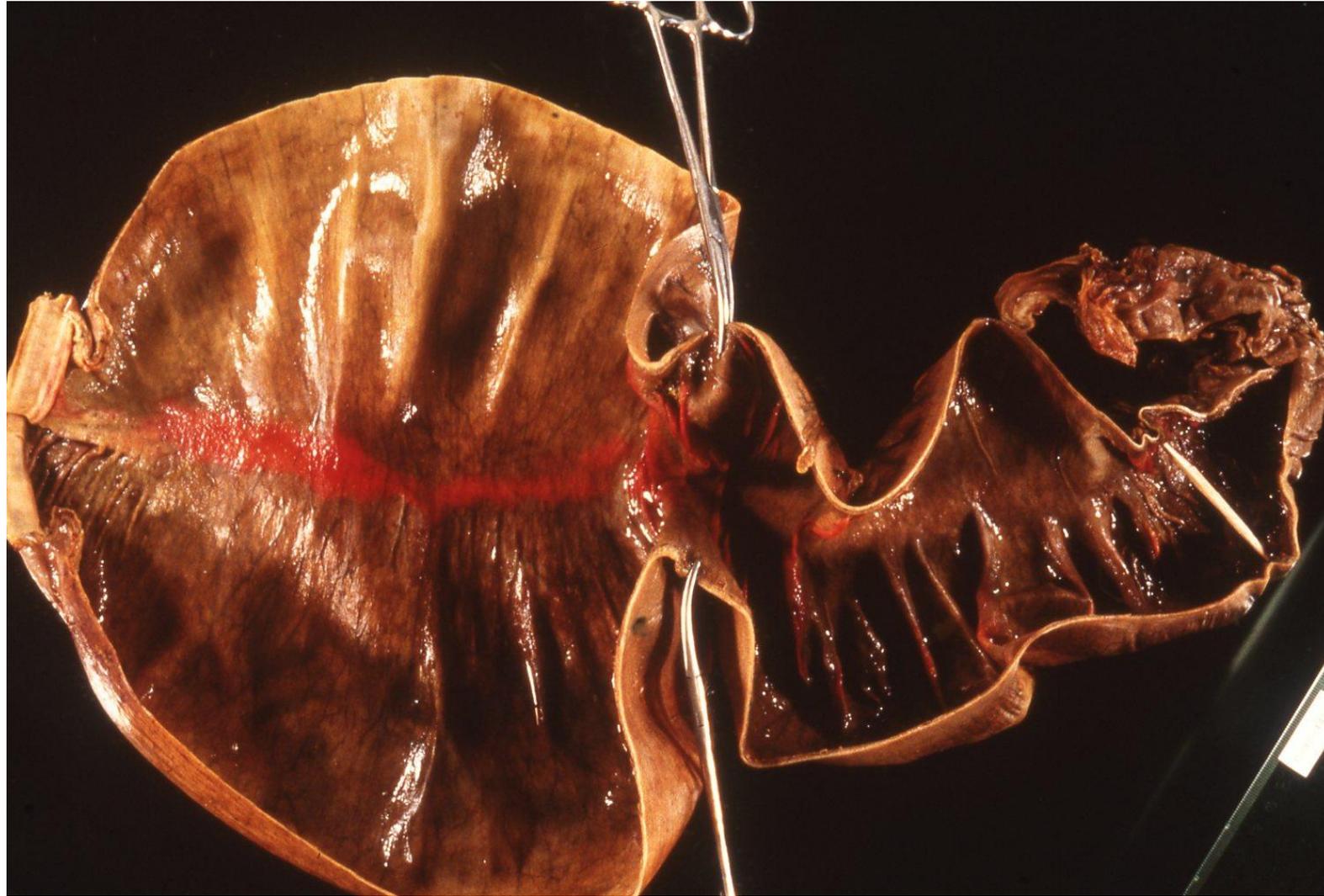
Gross appearance of the Chagas heart at autopsy. Batista procedure (reduction left ventriculoplasty) has been applied.



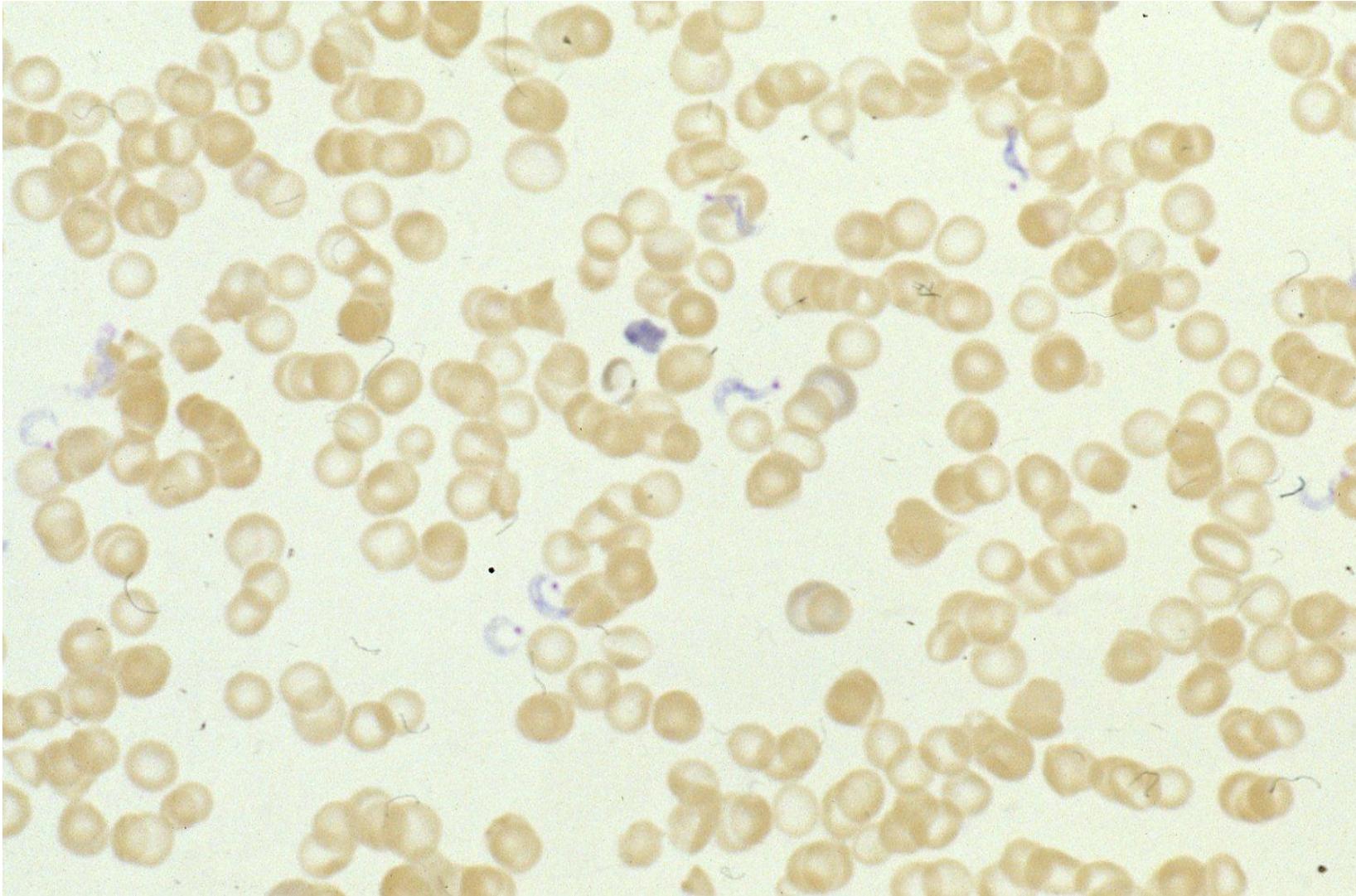
Localized swelling at the site of the bite by *Triatoma* as "Romaña's sign":  
The eyelid swelling is called as "chagoma".



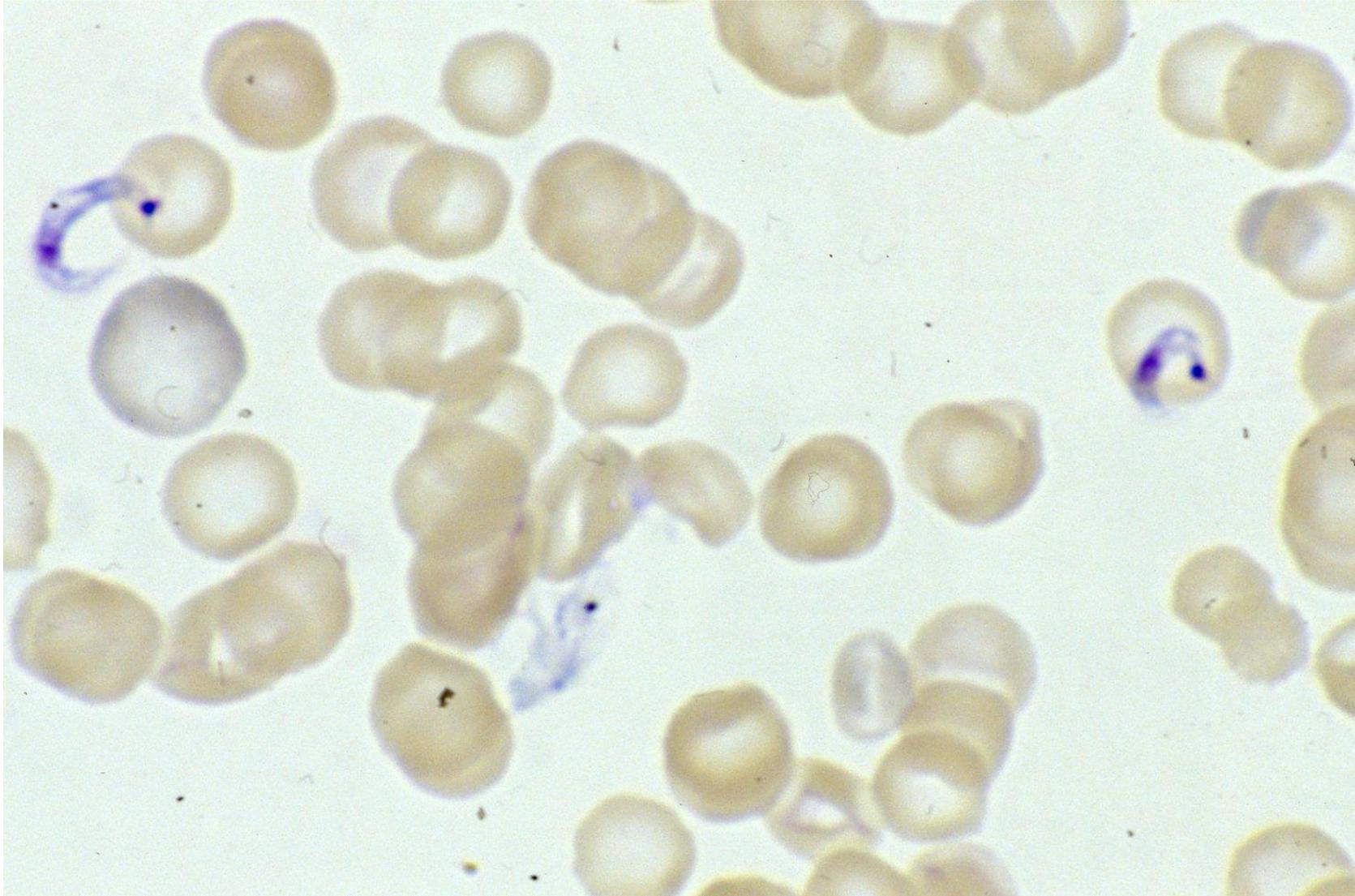
*Triatoma* nicknamed as “a kissing bug” mediates *T. cruzi* infection, causing Chagas disease .



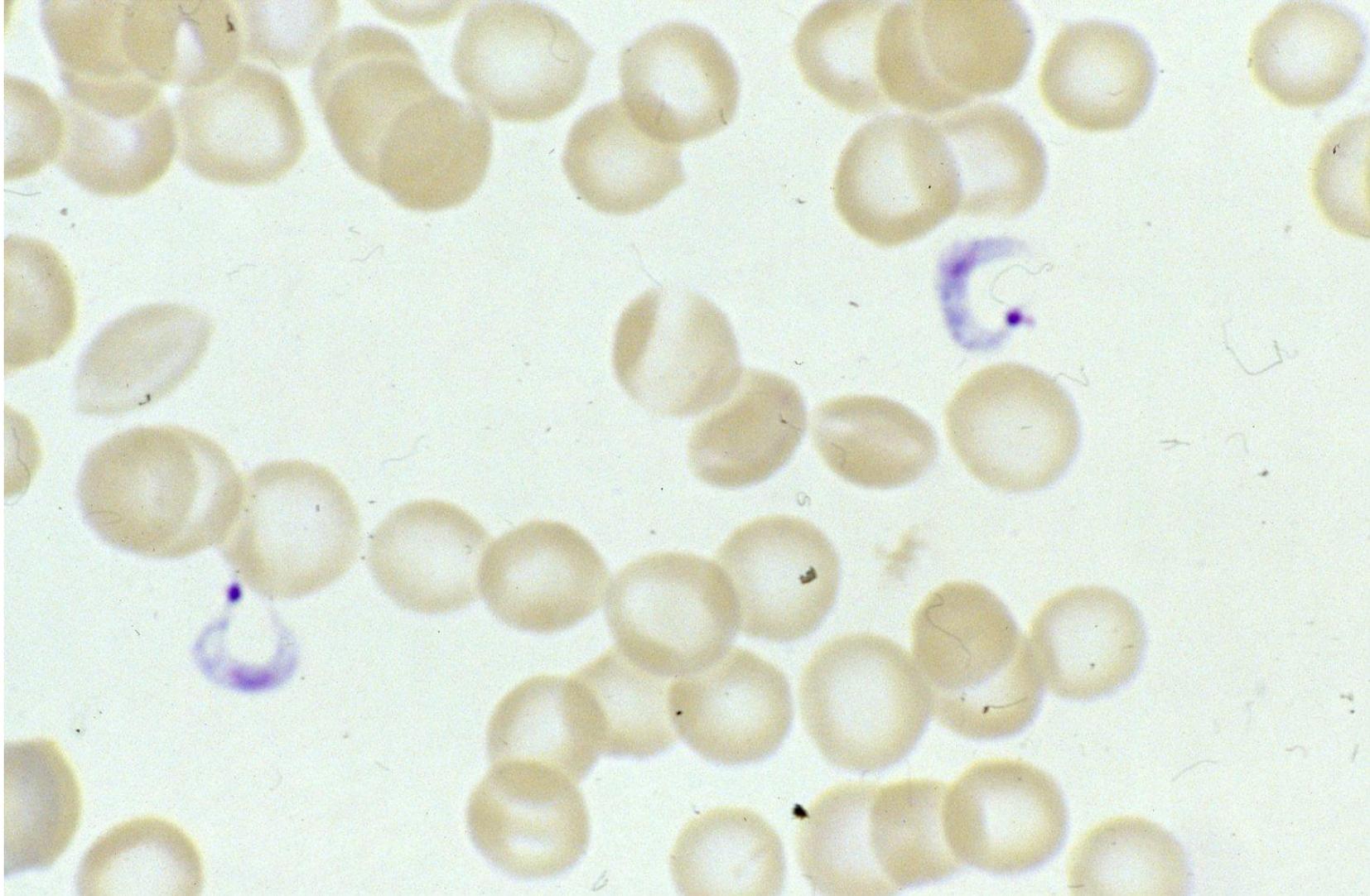
Occasionally, megacolon is provoked by chronic infection of *T. cruzi*.



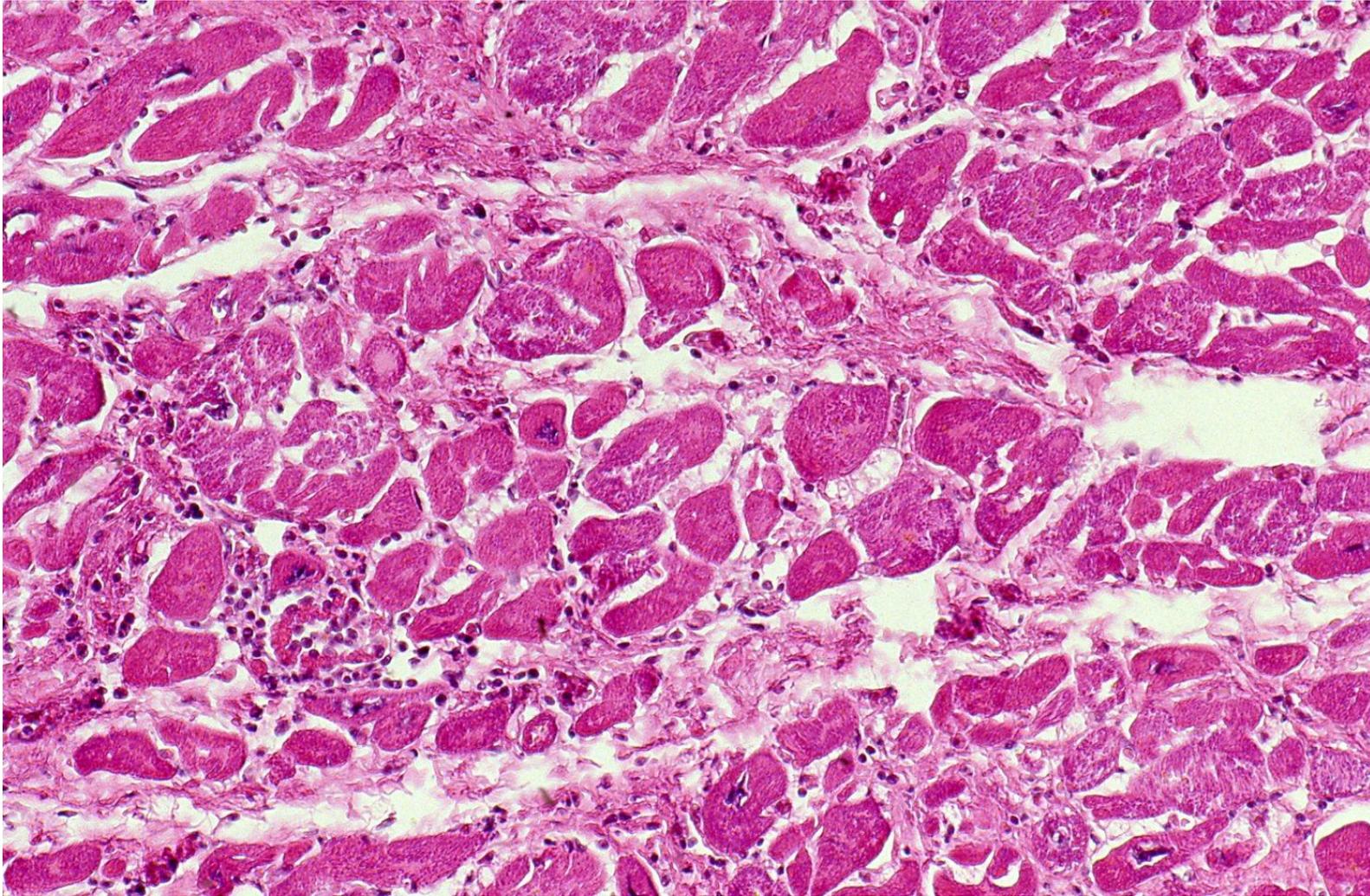
The peripheral blood smear discloses the infestation of comma-shaped *Trypanosoma cruzi* outside the red cells. May-Giemsa-1



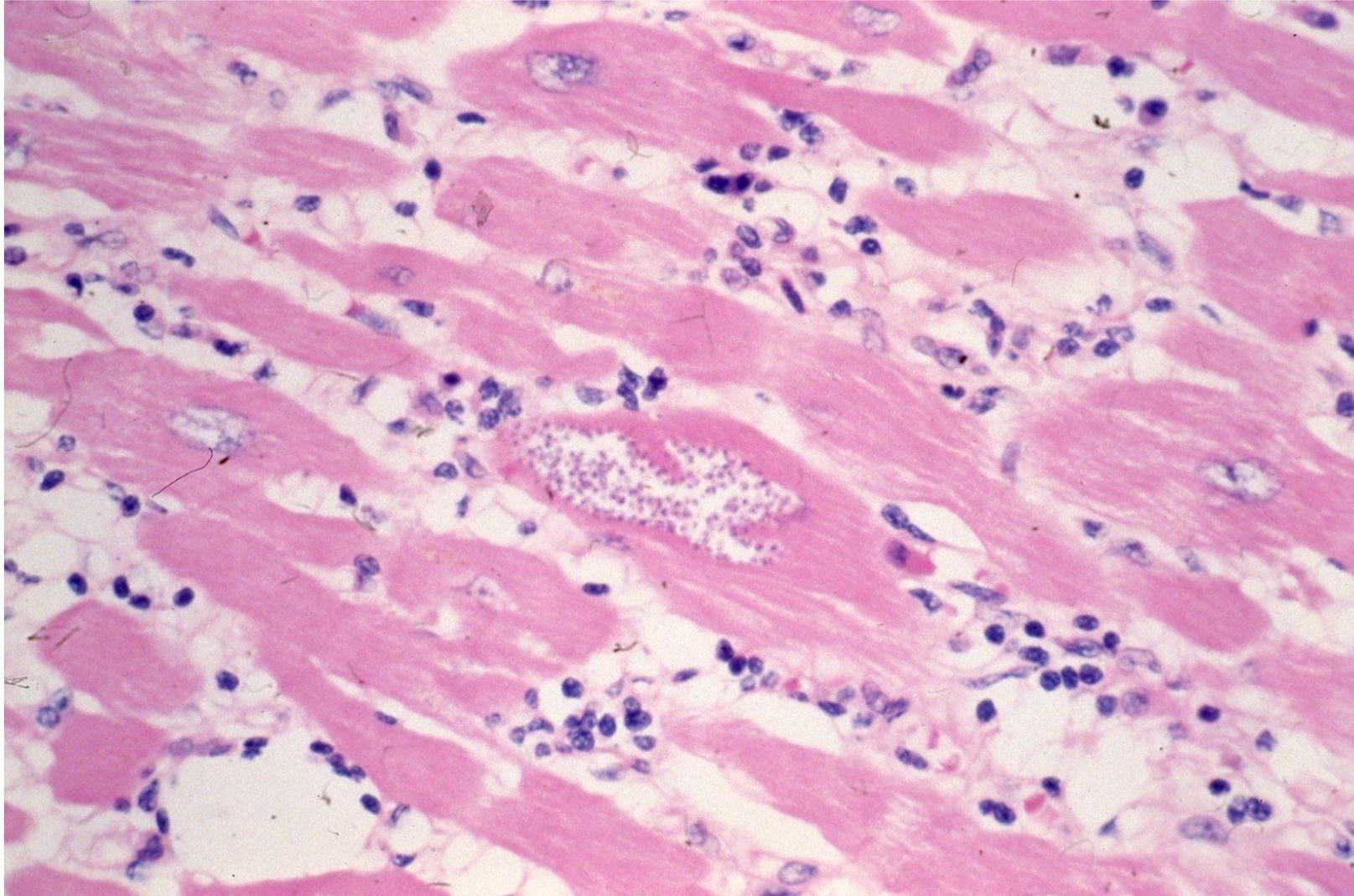
The peripheral blood smear discloses the infestation of comma-shaped *Trypanosoma cruzi* outside the red cells. May-Giemsa-2



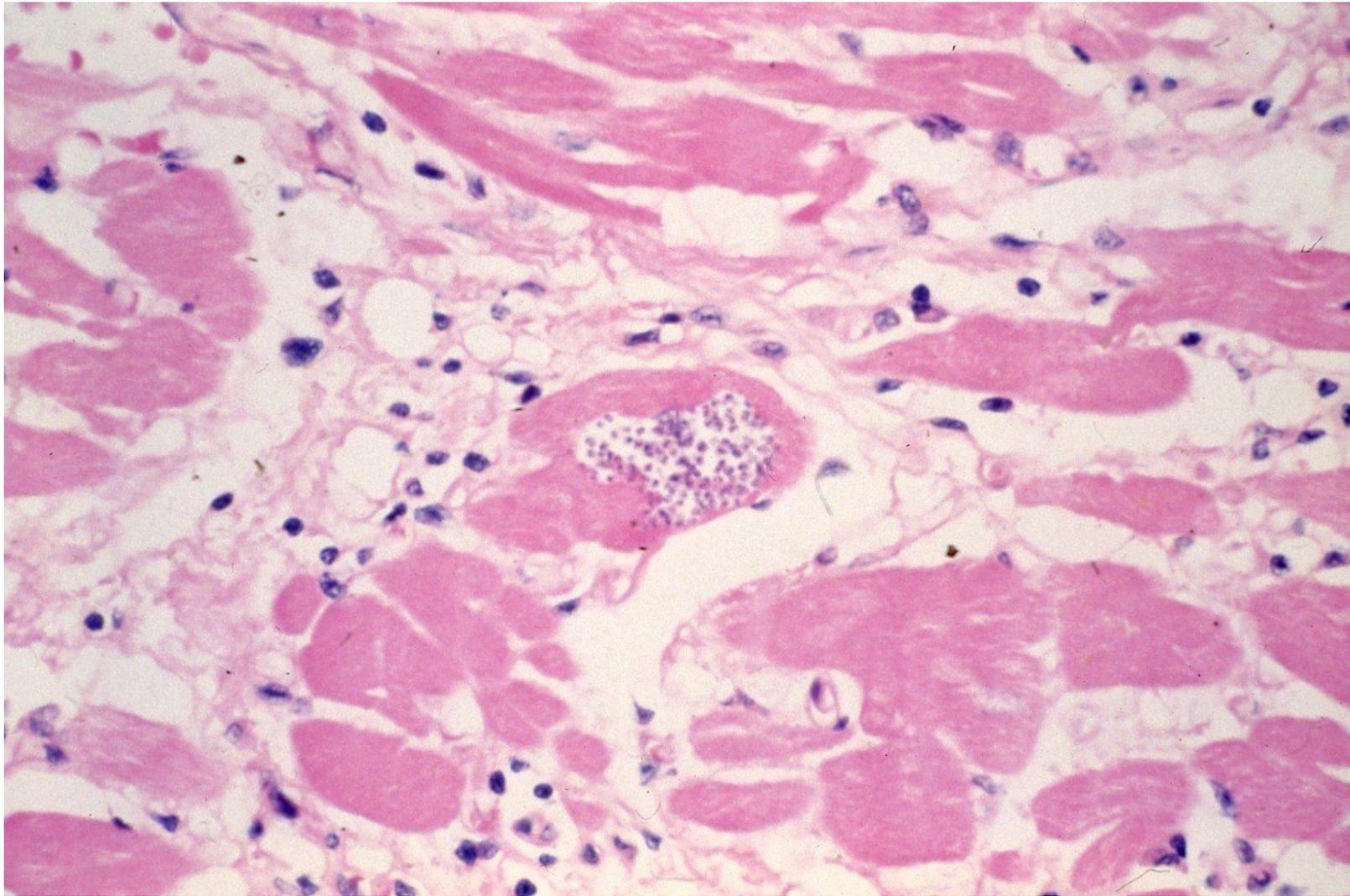
The peripheral blood smear discloses the infestation of comma-shaped *Trypanosoma cruzi* outside the red cells. May-Giemsa-3



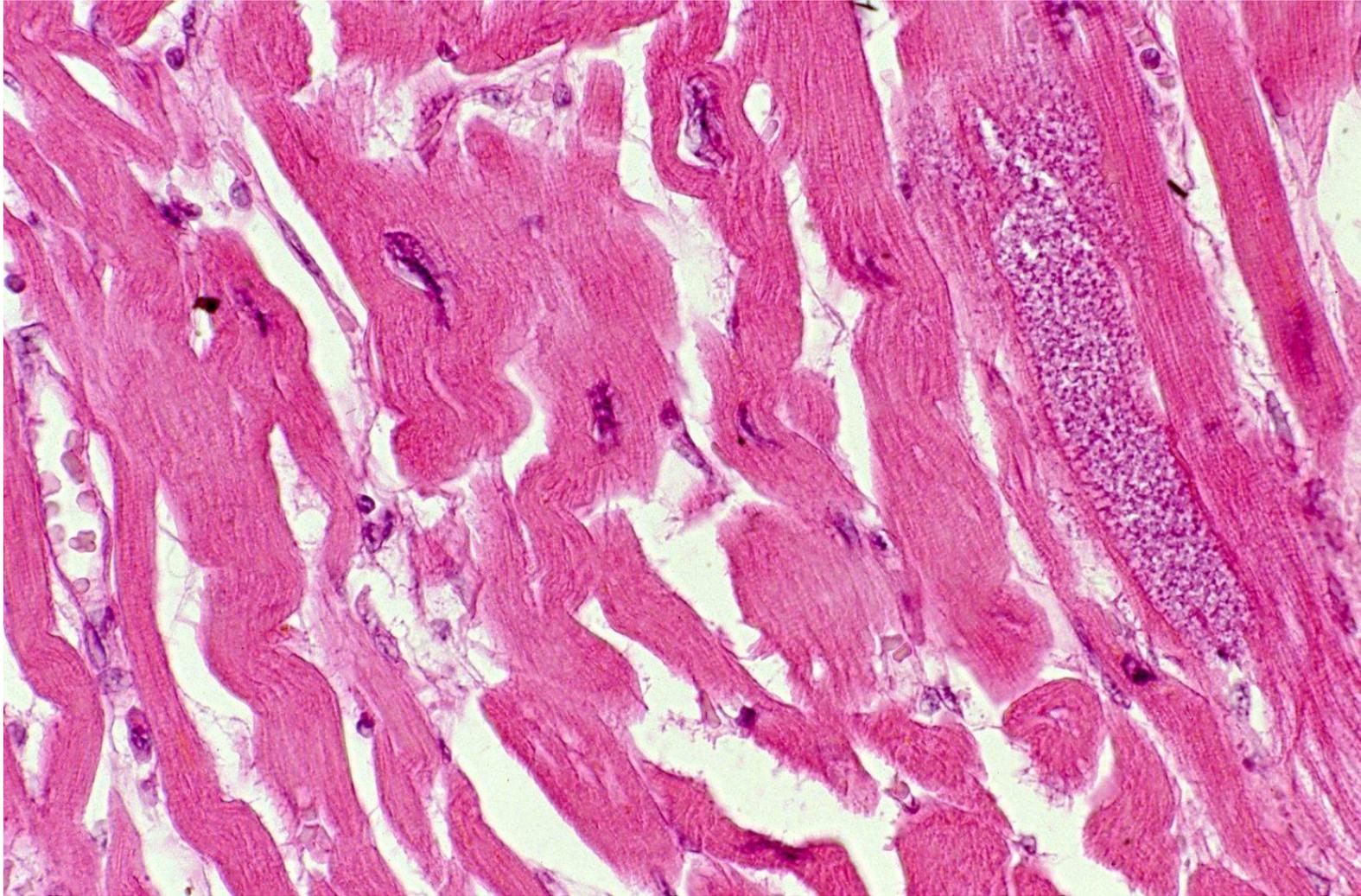
Chronic myocarditis in Chagas disease. A 62-year-old male farmer stayed in Brazil for 40 years. At autopsy, the heart weighed 730 g. Lymphocytic infiltration is multifocally observed in the diffusely fibrotic heart. H&E-1



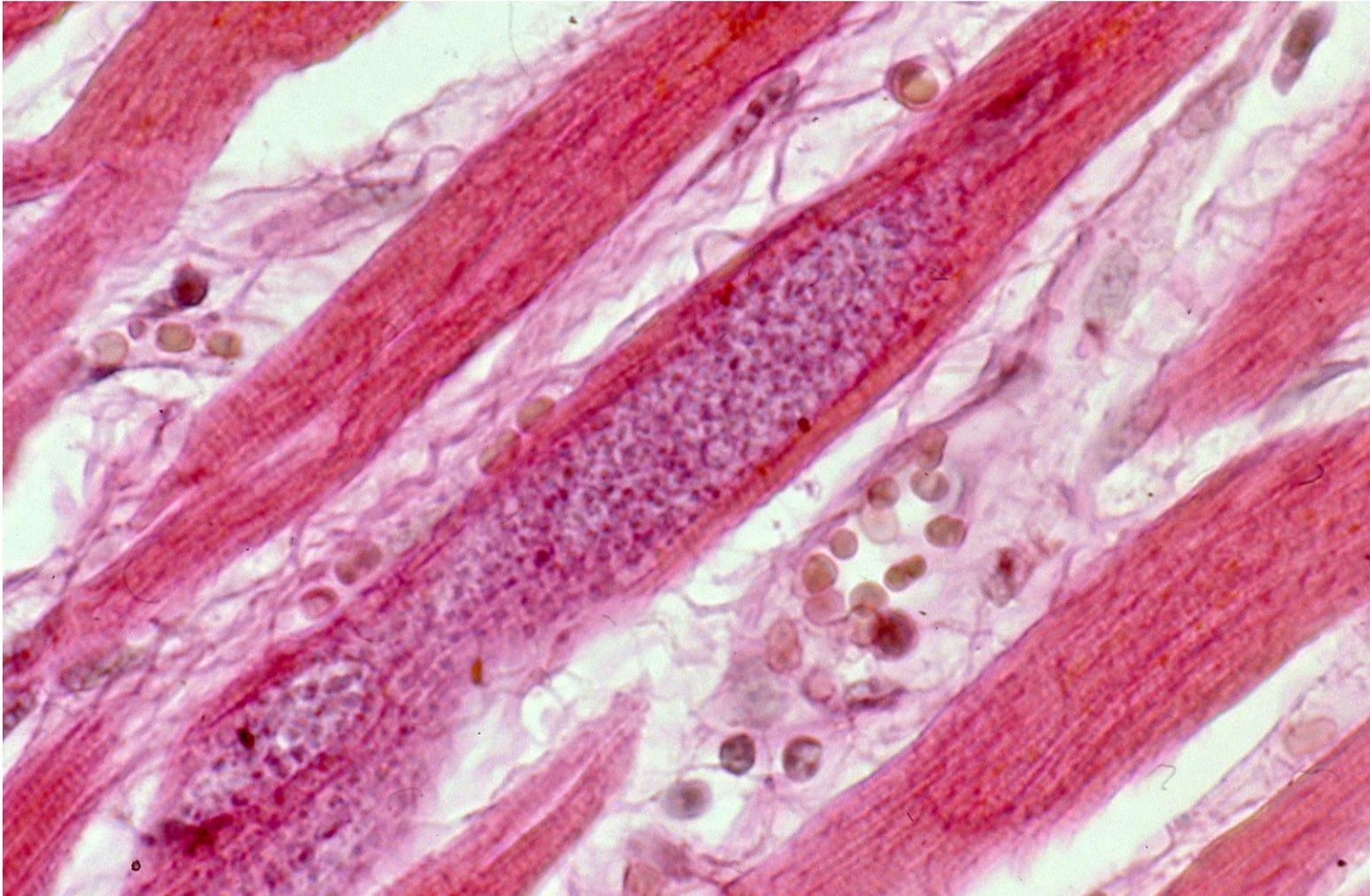
Chronic myocarditis in Chagas disease. A 62-year-old farmer stayed in Brazil for 40 years. At autopsy, the heart weighed 730 g. Lymphocytic infiltration is multifocally observed in the diffusely fibrotic heart. A cluster of protozoan bodies is observed in a cardiac muscle cell. H&E-2



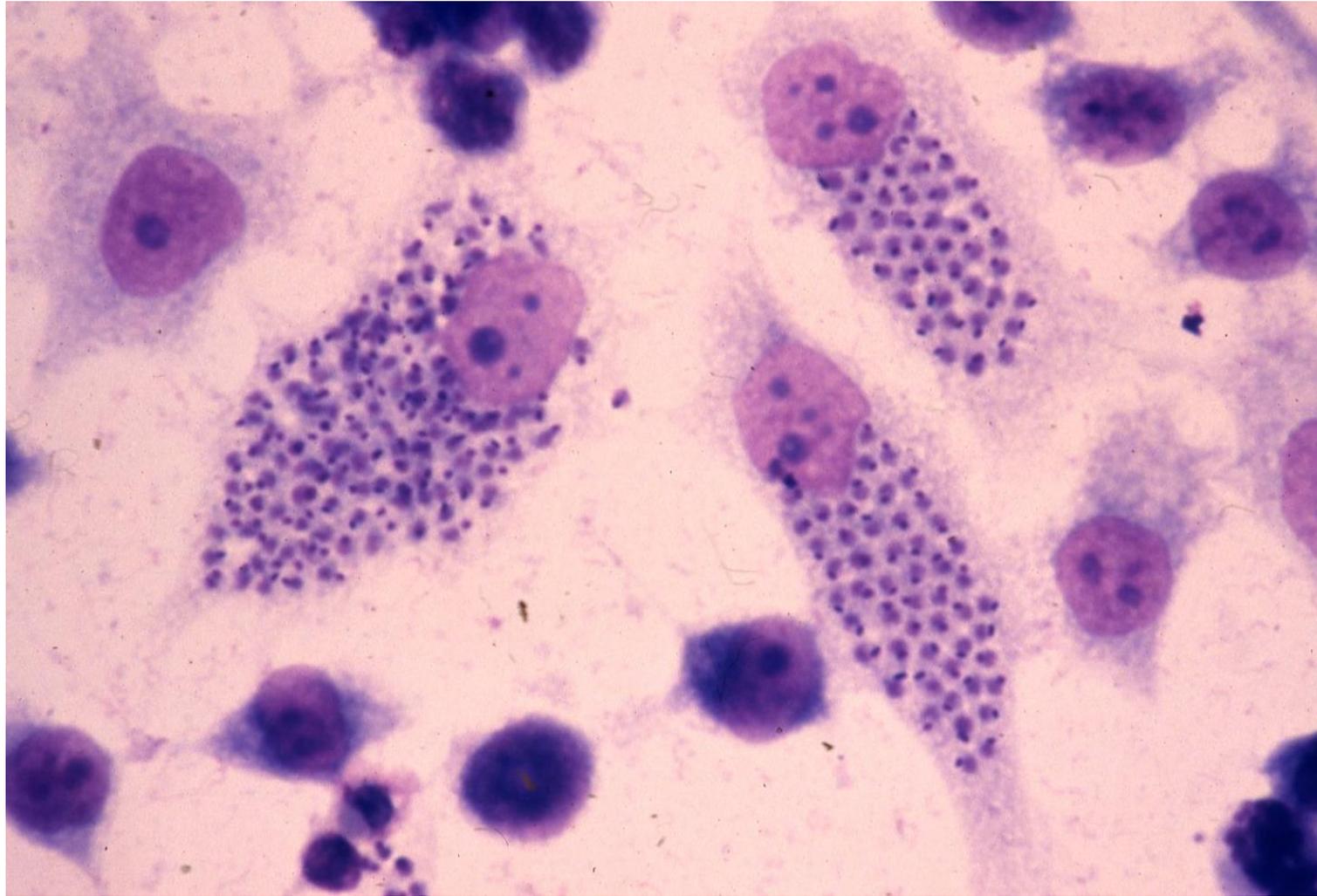
Chronic myocarditis in Chagas disease. A 62-year-old farmer stayed in Brazil for 40 years. At autopsy, the heart weighed 730 g. Lymphocytic infiltration is multifocally observed in the diffusely fibrotic heart. A cluster of protozoan bodies is observed in a cardiac muscle cell. H&E-3



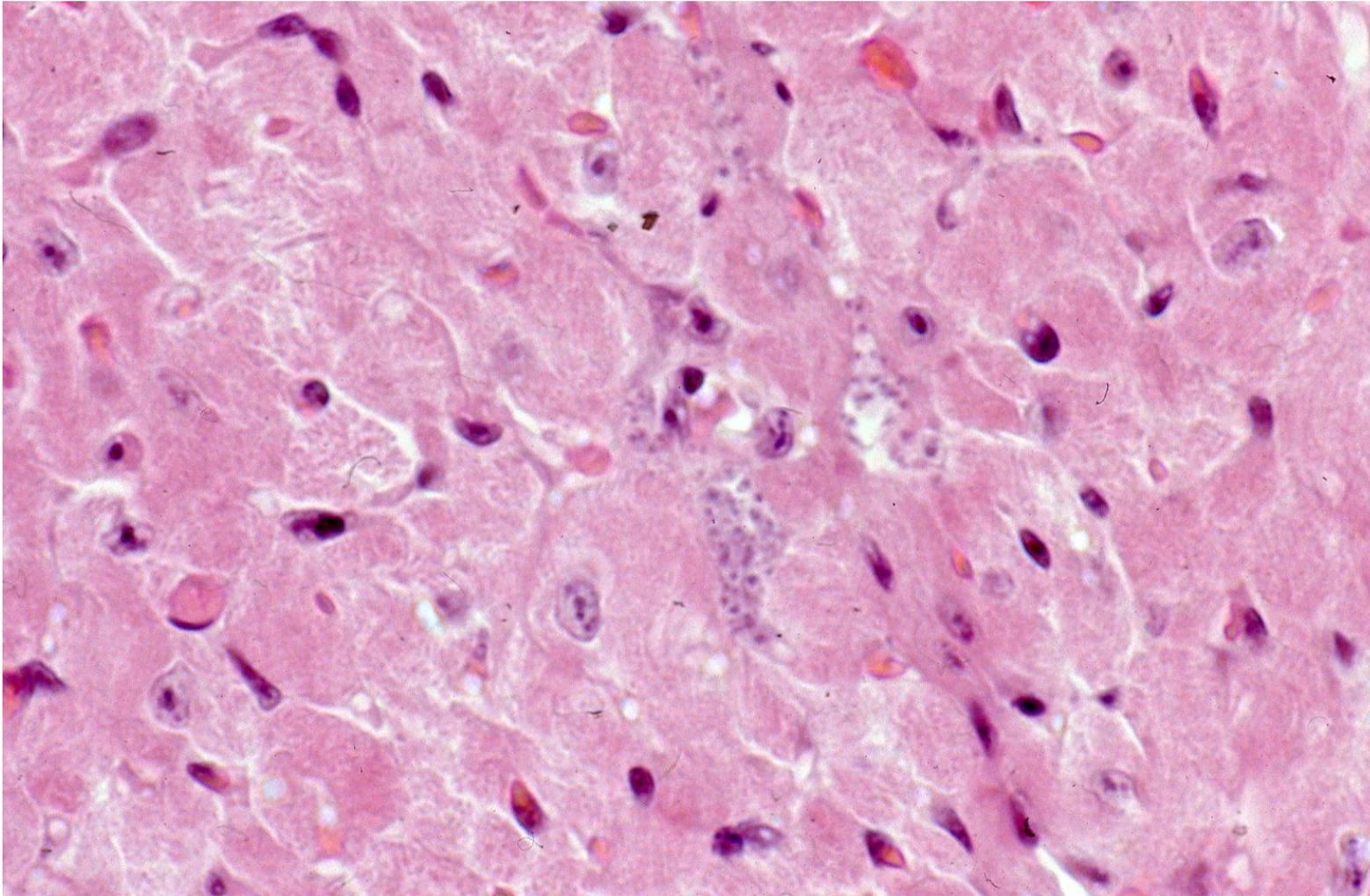
Chronic myocarditis in Chagas disease. A 62-year-old farmer stayed in Brazil for 40 years. At autopsy, the heart weighed 730 g. A cluster of protozoan bodies is observed in a cardiac muscle cell, but lymphocytic reaction is absent here. H&E-4



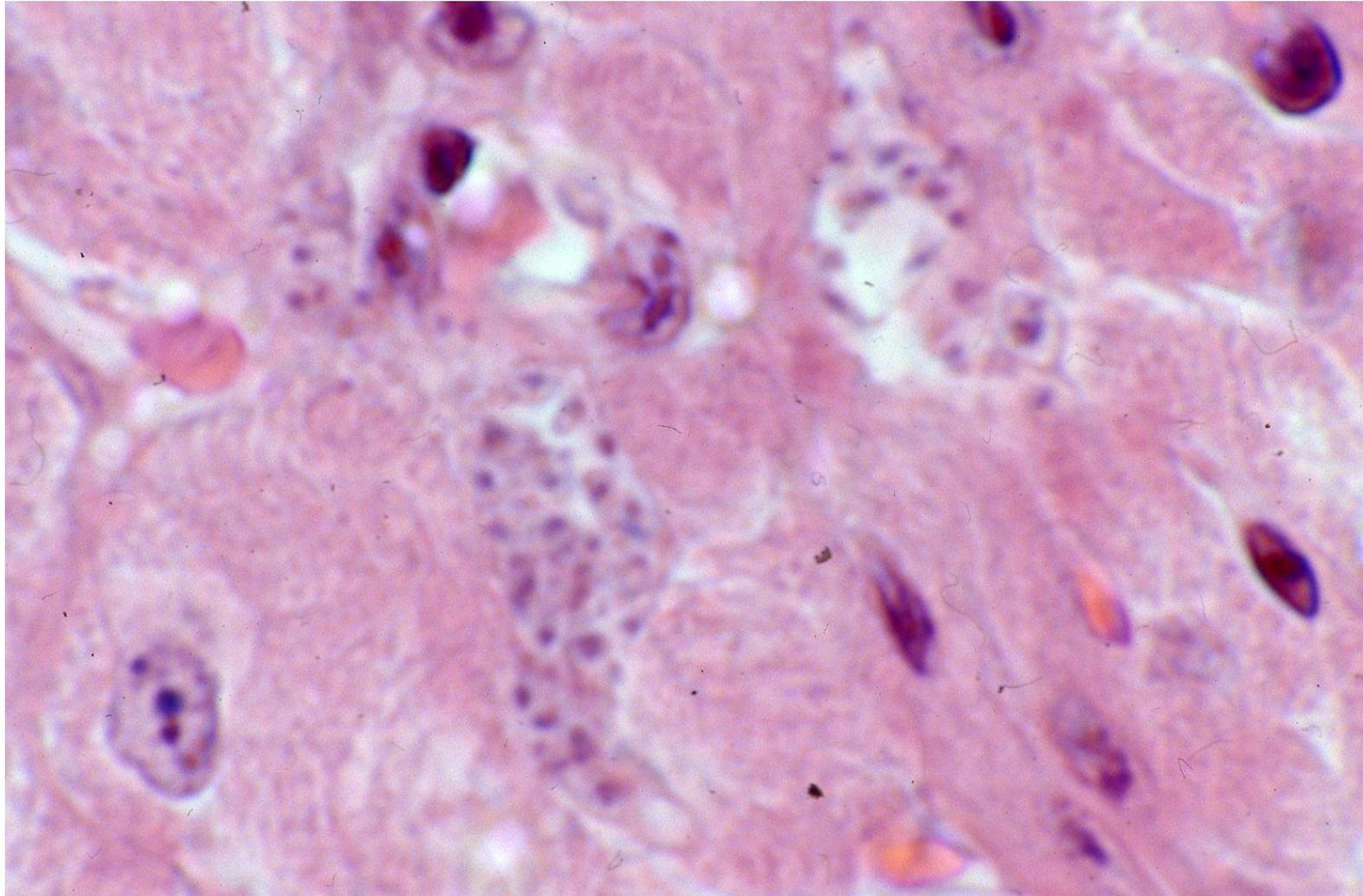
Chronic myocarditis in Chagas disease. A 62-year-old farmer stayed in Brazil for 40 years. At autopsy, the heart weighed 730 g. A cluster of protozoan bodies is observed in a cardiac muscle cell, but lymphocytic reaction is absent here. H&E-5



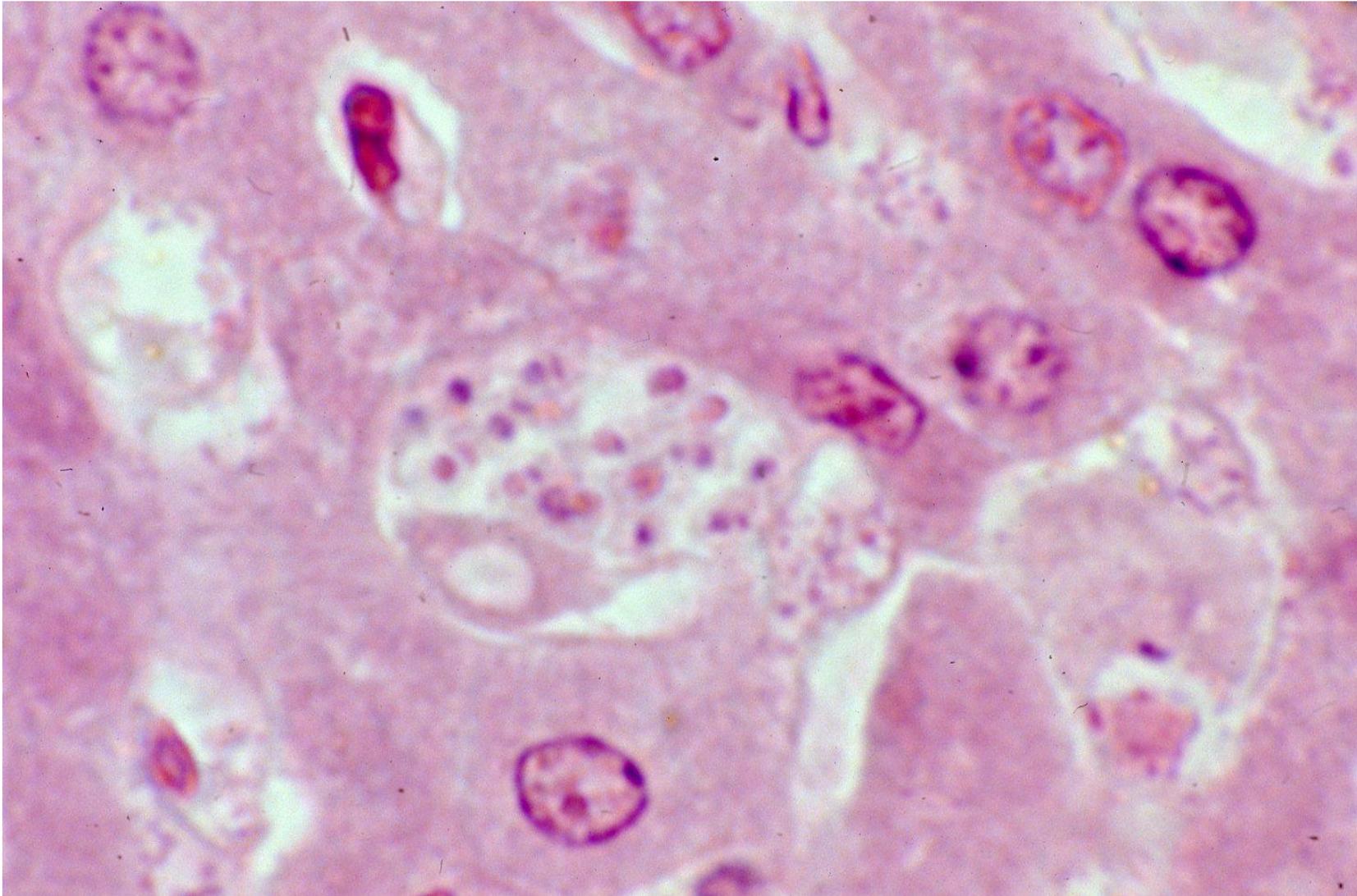
Cultured Hela cells infected with *Trypanosoma cruzi*. Within the cells, amastigote features are seen, indistinguishable from *Leishmania*. Round nuclei and kinetoplasts (nucleus-associated small particles) are recognized. Giemsa stain



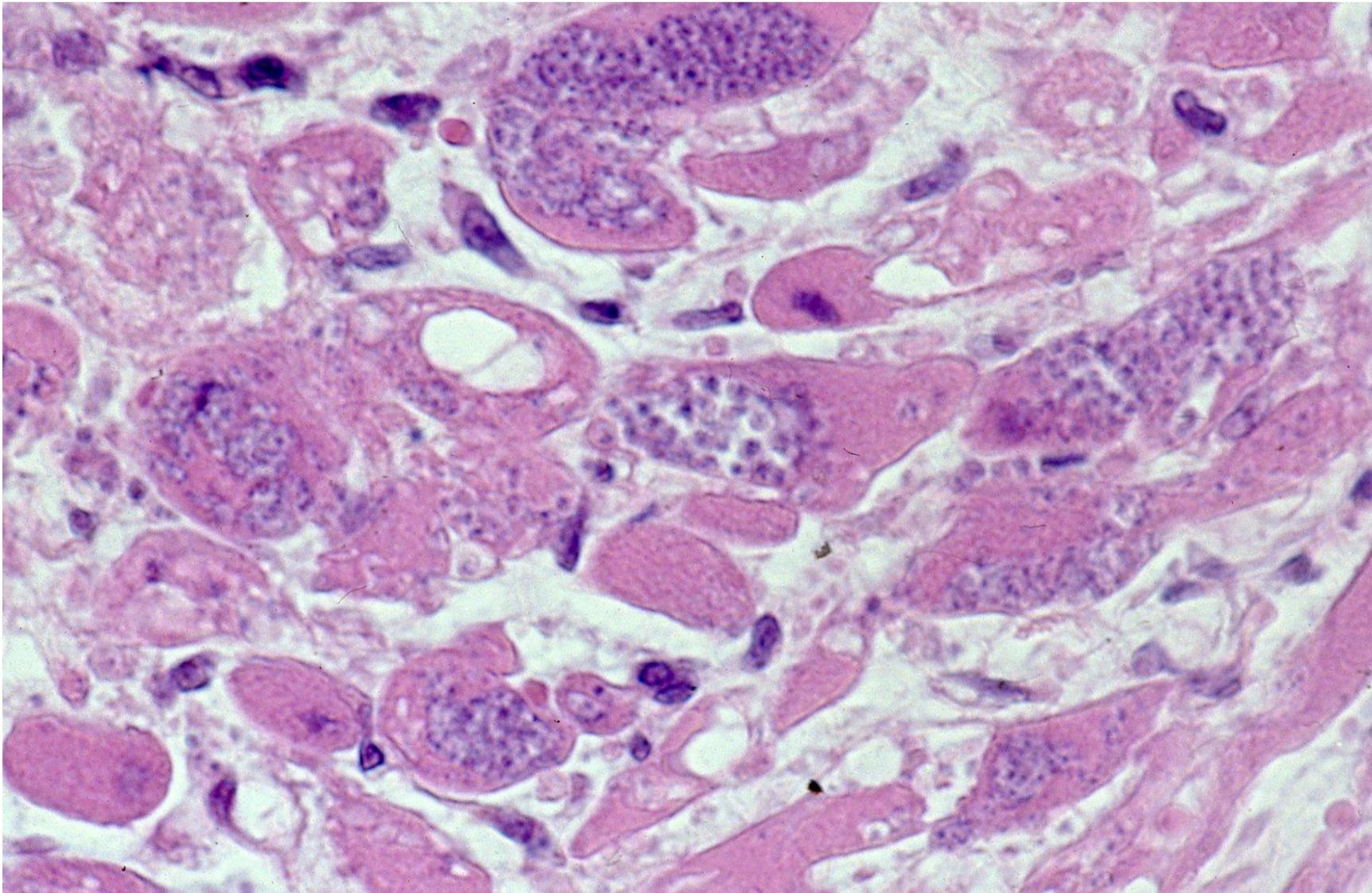
Mouse heart experimentally infected with *T. cruzi*. The cardiac muscle cells contain a cluster of amastigote bodies. Inflammatory reaction is scarcely observed. H&E-a



Mouse heart experimentally infected with *T. cruzi*. The cardiac muscle cells contain a cluster of amastigote bodies. Inflammatory reaction is scarcely observed. H&E-b



Mouse liver experimentally infected with *T. cruzi*. Kupffer cells contain a cluster of amastigote bodies with nuclei and kinetoplasts. H&E-c



The heart of the athymic nude mouse experimentally infected with *T. cruzi*. Numbers of the cardiac muscle cells contain clusters of amastigote bodies. Inflammatory reaction is scarcely observed. H&E-d