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THE COLONIZATION OF CARTILAGE AND LIGAMENTS BY *TRYPANOSOMA CRUZI*

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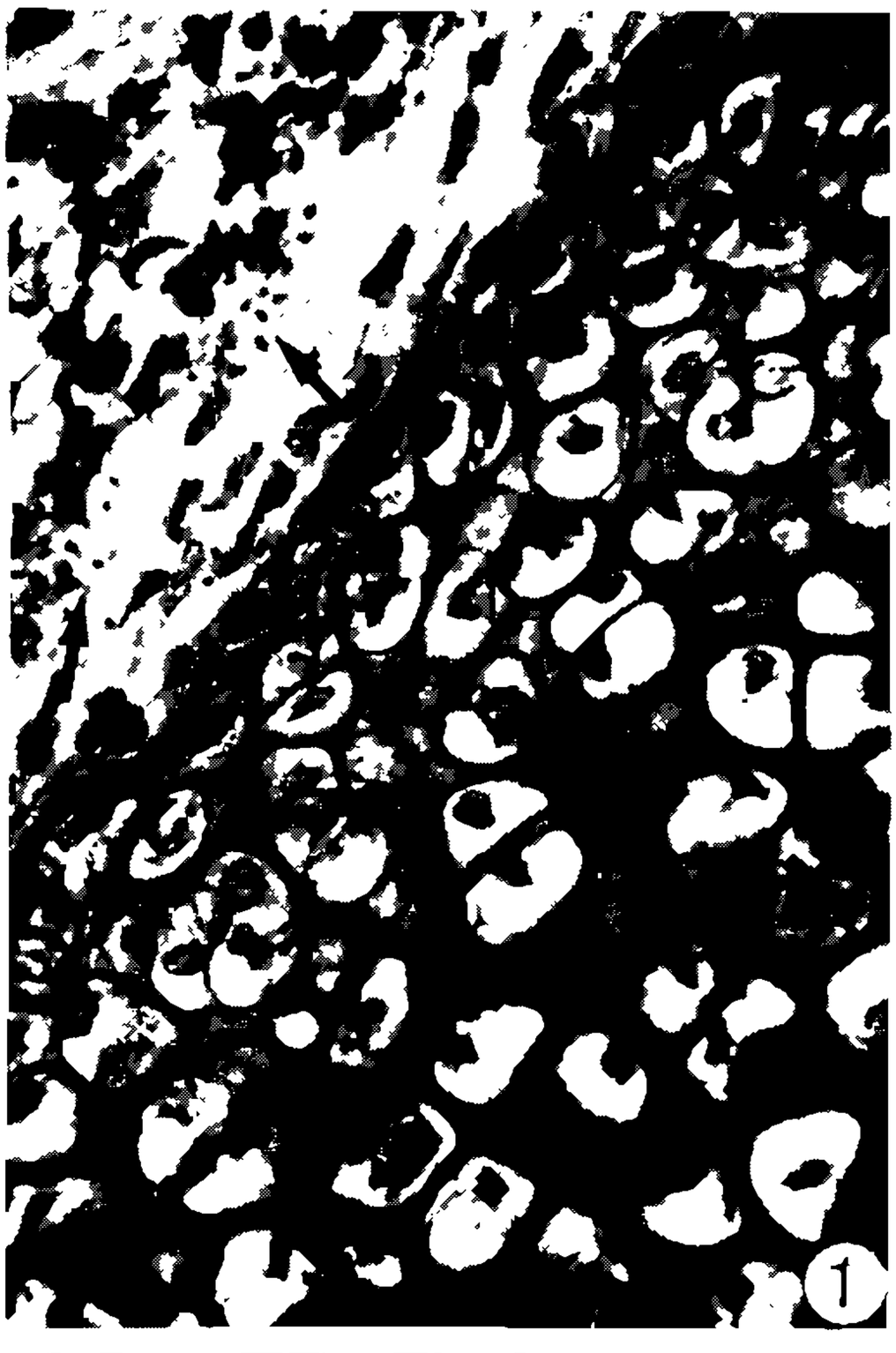
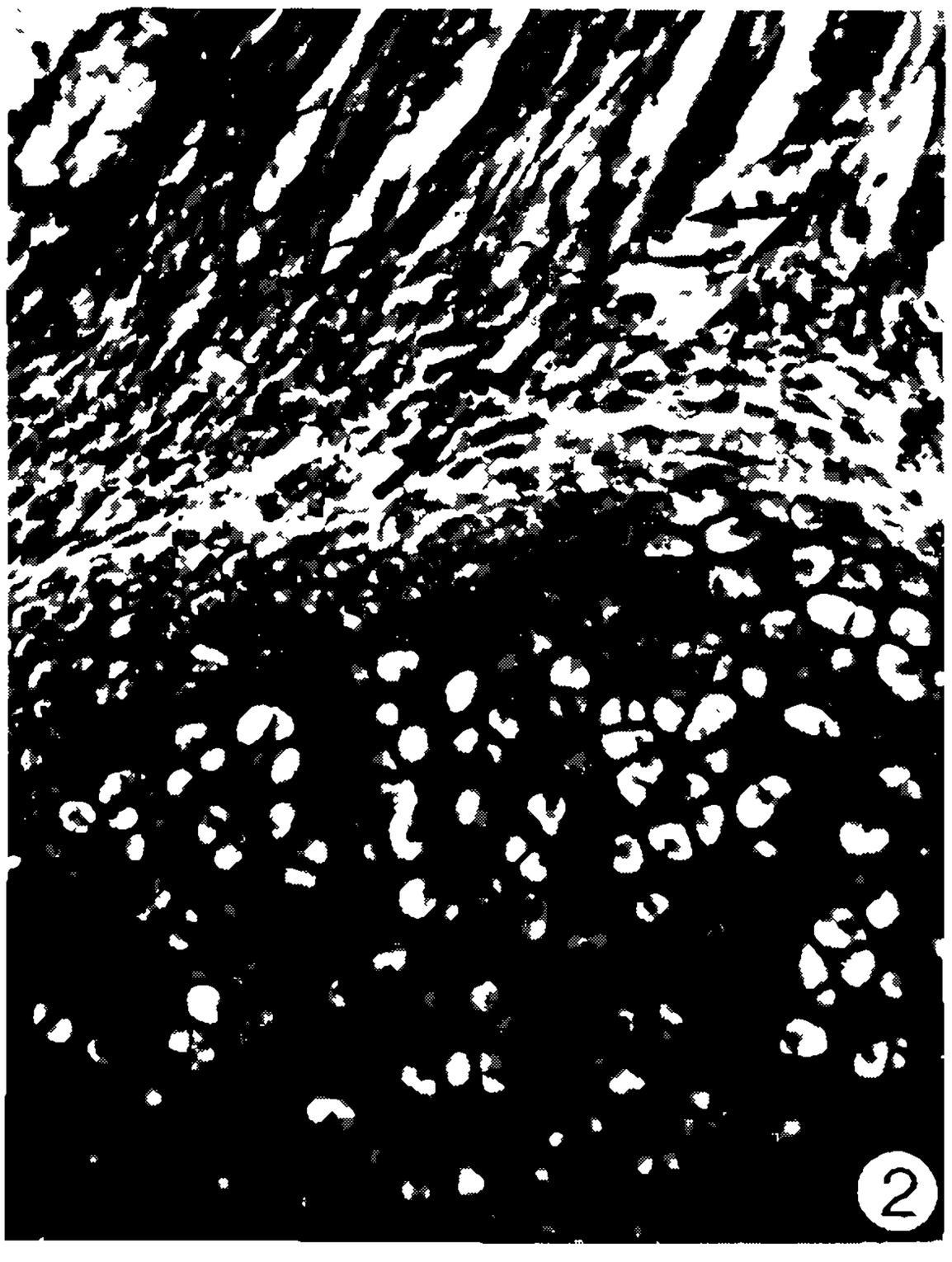
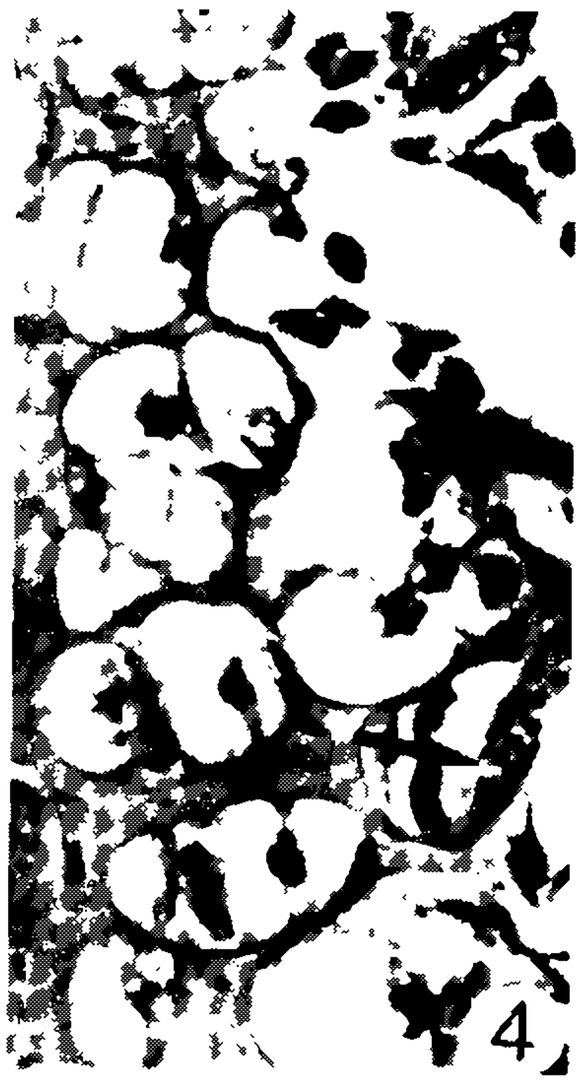
Immunopathology of Chagas' disease remained a long time with many questions raised upon the pioneer studies of Carlos Chagas, who described many symptomatologies which caused a great impact in the beginning of the century by the systemic character of this trypanosomiasis (C. Chagas, 1916, *Mem. Inst. Oswaldo Cruz, 8:* 37-65). One of the arguments for correlation between symptons and the etiological agent was the demonstration that related tissues are colonized by the parasite. Recently, studies using immunodeficient animals have been contributing for better understanding of some aspects of the immunopathology of Chagas' disease. Infected athymic (nude) mice present a slight or none tissue inflammatory reaction, a high parasitaemia and tissue colonization by amastigotes (S. C. Gonçalves da Costa et al., 1984, *Ann. Immunol. Inst. Pasteur, 135C:* 317-332) and revealed that CD_4^+T lymphocytes play a dual role "in the immunopathology of acute experimental Chagas' disease" (M. Russo et al., 1988, *Ann. Immunol. Inst. Pasteur, 139C:* 225-236), such as in the mechanisms responsible for control of parasite invasiveness and mediation of mononuclear cellular infiltration. Comparing nude mice with littermates infected by *Trypanosoma cruzi,* it was possible to observe, on the 13th day of infection that the systemic colonization of organs and tissues is substituted by inflammatory reaction in most tissues (S. C. Gonçalves da Costa et al., *loc. cit.*) leading to undesirable immunopathological effects.

Attention was called to rheumatological manifestations of Chagas' disease in a trial evaluation of patients from one endemic region of Brazil. They were found in the town of São José do Rio Preto, the surrounding rural areas of which harbours 16 to 25% of infected people, with "Rheumatic symptomatology typically presenting inflammatory signs and impaired function of joints" (I. Sanches, 1966, VI Congresso Brasileiro de Reumatologia). The correlation between rheumatic symptomatology and Chagas' disease was indirectly made by serological test; it is difficult, however, to find solid arguments if we have no direct evidences to establish striking correlations between symptoms and cause.

The present report shows, in immunodeficients animals, the colonization of cartilage (Fig. 1) in young OF_1 mice infected with 10^4 trypomastigotes of the Y strain and Fig. 2 shows the colonization of the ligaments by amastigotes. Studies using neonates and 15 days old mice exhibit an extended mononuclear inflammatory reaction in the perichondrium of costal cartilage (Fig. 3). These observations raised the questions on how *T. cruzi* reaches the perichondrium of cartilage and which types of cells are colonized. Electron microscopic studies are being carried on in order to better understand questioned points, but fig. 4 shows clearly that the chondrocytes are more colonized by the parasite. Levels of colonization of perichondrium of costal cartilage is dramatically higher in neonates and young mice. This characteristic propensity of neonates to microbial invasion is related to immature host defense (K. E. Schuit et al., 1980, *Pediatrics, 65:* 501-504; K. E. Schuit & R. De Biasio, 1980, *Infect. Immun., 28:* 319-324). In the case of *T. cruzi,* that has the ability to replicate rather than be destroyed after being phagocytized by non-activated macrophages, those infected cells might enhance the spread of the parasite. Thus, these results in experimental models, give histopathological basis for further investigations on rheumatological manifestation of Chagas' disease. It is important to mention here that the therapy employed in these painful rheumatological processes are based on anti-inflammatory drugs which, at least in acute phase of experimental infection, induce an enhancement of the *T. cruzi* invasiveness,







Histopathology of cartilage and ligaments of OF_1 neonate mice infected with Y strain of *Trypanosoma cruzi*. Haematoxylin and eosin staining. Fig. 1: hyaline costal cartilage colonized by amastigotes (arrow), X 400. Fig. 2: colonization of cartilage and ligaments by amastigotes (arrows), X 160. Fig. 3: large nests of amastigotes in the ligaments associated with inflammatory reaction that appear in the perichondrium too (arrow), X 160. Fig. 4: colonization of chondrocyte (arrow), X 400.

either using corticoids (Nery-Guimarães et al., 1970, *O Hospital, 77:* 119-132) or non hormonal anti-inflammatory drugs like indomethacin, (Gonçalves da Costa et al., 1986, *Rev. Bras. Neurol., 22:* 161-164).

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