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OXYURID INFESTATIONS IN SMALL ANIMALS FROM 9,000 B.P. IN BRAZIL

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After the pioneering work of Ruffer (1910, Brit. Med. J. 1:16) recording the presence of eggs of Schistosoma haematobium in the kidneys of an Egyptian mummy, scientists became interested in the parasitological examination of the remains of ancient human and animal bodies, mostly tissues and coprolites, which are still preserved in an organic state.

The parasitological analysis of ancient dried feces was first carried out on a systematic basis after the findings of Szidat (1944, Zeitschr. Parasit. 13: 265-274) by persons interested in the study of patterns of parasitic infestations in ancient populations, thus starting a new line of parasitological research, which was called paleoparasitology.

This note reports findings obtained during a field research program, the purpose of which was the study of the origin of parasitic infestations in the New World through the analysis of archeological material.

Archeological excavations performed at Santana do Riacho, Minas Gerais, Central Brazil, yielded a number of small, slender, dark brown coprolites (Fig. 1), measuring from 1 to 3 cm in length, and with a smooth surface containing small brilliant points. The coprolites were in close contact with ancient human burials under a rock shelter at depths varying from 60 to 140 cm, corresponding to levels with a maximum dating of 9640 ± 110 B.P., estimated by the radiocarbon method. They were distributed in groups of 50 to 200 inside small chambers communicating with tunnels of 2 to 3 cm in diameter, which were obstructed and directed upwards to a maximum depth of 60 cm below the surface of the soil.

In the laboratory, the coprolites were rehydrated through immersion in a 0.5% aqueous solution of trisodium phosphate for 72 hours, following the technique of Callen and Cameron (1950, New Scient. 8:35-40), and then examined for parasites, using the spontaneous sedimentation technique proposed by Lutz (1919, Mem. Inst. Osw. Cruz. 1:121-150). The microscopic examination of the sediment showed several nematode eggs with a striated brown shell formed in three layers, measuring 80.57 ± 4.14 u x 39.21 u (Fig. 2). Small rounded forms similar to amoebid cysts were also observed, but accurate identification was not possible.

The brilliant points on the surface of the coprolites were remnants of insects, which formed the major part of the coprolites; these were mostly heads of Isopterans (Nasutitermes sp.) and mandibles of Hymenopterans (Formicidae), as well as of two species of Isopterans.

To collect information on the local fauna in order to formulate hypotheses about the origin of the coprolites, small animals were trapped around the shelter, and their intestinal helminths recorded. In one of them, a chameleon of the genus Tropidurus (Sauria; Iguanidae) several Parapharyngodon sceleratus (Travassos 1923) (Nematoda; Oxyuridae) were collected, and eggs identical to those found in the coprolites were taken from the worms. The coprolites were also compared with recent artificially desiccated feces of Tropidurus torquatus captured in the campus of Instituto Oswaldo Cruz, Rio de Janeiro, and a striking morphological similarity was noted. Taking into account this evidence and the shell morphology of the eggs found in the coprolites, as well as the geographical and host distribution of the known species of the genus Parapharyngodon recorded by Barus (1973, Folia Parasit. 20:131-139), we tentatively identified it as belonging to the species P. sceleratus. Although the origin of the coprolites could not be established beyond doubt, they probably were eliminated by a species of the genus Tropidurus.

The knowledge of parasitic infestations in animals from paleoenvironments, which have undergone significant modifications during past millennia, could have a bearing on some biological questions. These include speciation rates and other historical aspects of the host-parasite relationship, as well as host migrations and faunistic origins in specific geographical situations.

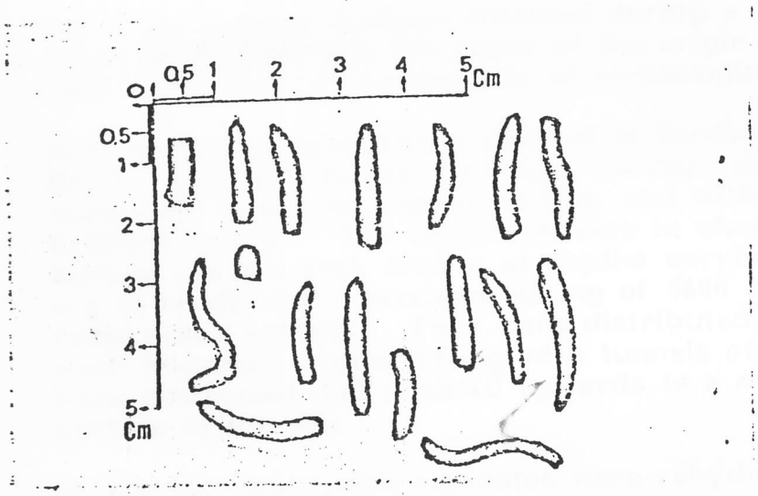

Figure 1

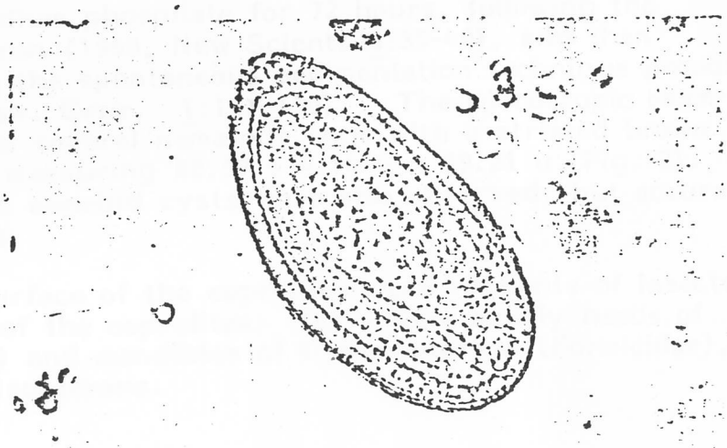

Figure 2