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The finding of eggs and larvae of parasitic helminths In archaeological material from Unai, Minas Gerais, Brazil

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Introduction

The study of parasites in human coprolites can throw light on such questions as the origin and antiquity of parasitic associations in different parts of the world, thus increasing our knowledge of the history of parasitic diseases, and can also be used as an aid to the interpretation of habits and migrations of prehistoric populations. Earlier work on these lines includes that of PIZZI & SCHENONE (1954), WITENBERG (1961), PIKE (1968), FRY & HALL (1969), MOORE *et al.* (1969) and FONSECA (1970), among others.

We here report the preliminary results of the parasitological examination of some coprolites collected by the staff of the Instituto de Arqueologia Brasileira, Rio de Janeiro.

Materials and Methods

The material analysed was collected at the Gentio II Cave (site MG-RP 6) at Unaí on the north-west of the State of Minas Gerais, Central Brazil (elevation about 600 m; geographical coordinates 16° 22′ 45″ S and 46° 53′ 45″ W; climate tropical with dry period in winter; vegetation, Savannah). The cave is located in a calcareous bank 2·5 km long; the entrance is about 6 m above soil level, and its main chamber measures 10 m × 14 m and is about 3 m high, close to the entrance. This site was used by prehistoric people as a habitation and served also as a burial place. Wooden art objects, feathers, snail shells and food remains, e.g. peanut and maize were found in the different strata. The walls were covered with red, black and yellow paintings.

The layers were dated by the ^{14}C method (Smithsonian Radiation Laboratory). The site has two occupation layers, the deepest (oldest dating 8620 ± 100 BP) corresponding to groups of hunter-gatherers, and the upper (3490 ± 120 to 430 ± 70 BP) to groups showing agricultural activity. Coprolites were in the upper layers (10 to 75 cm deep) and the positive samples may be up to 3610 years old and have a minimum age of 360 years.

22 samples of dried faeces from levels corresponding to occupation periods ranging from 3,490 ± 120 BP to 430 ± 70 BP were examined. These were rehydrated by immersion in a 0·5% aqueous solution of trisodium phosphate for at least 72 hours, as recommended by CALLEN & CAMERON (1960). After rehydration the material was allowed to sediment in a conical glass jar. Part of the sediment was examined under the microscope without staining. The remainder was preserved in acetic formalin.

Results

Seven samples were found positive for helminth eggs and/or larvae. The eggs were identified as those of *Trichuris* (Fig. 1), with an average size (15 eggs) of 55·33 ± 2·22 μm × 28·85 ± 0·09 μm, and of the family Ancylostomidae (Fig. 2), with an average size (eight eggs) of 73·20 ± 9·16 μm × 40·20 ± 5·09 μm. Three types of larval nematodes, presumably of parasitic forms were also found.

Discussion

Applying the criteria used by others (e.g. size, shape, odour after rehydration and colour of the rehydrating solution) we believe the coprolites to be

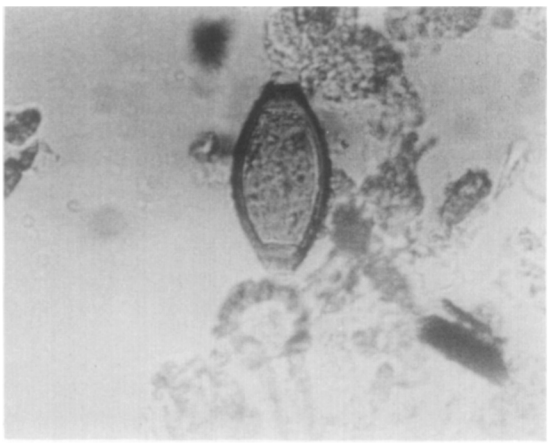

Fig. 1. *Trichuris* egg. × 150.

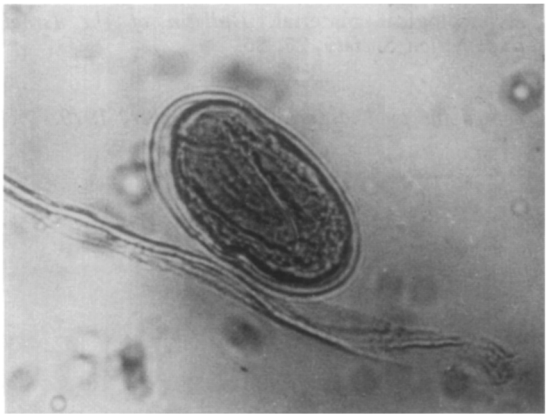

Fig. 2. Ancylostomid egg containing larva. × 150.

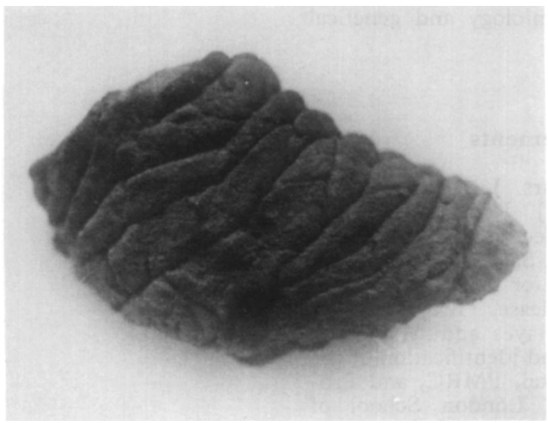

Fig. 3. Coprolite.

of human origin (Fig. 3). The average dimensions of the *Trichuris* eggs correspond to those of *T. trichiura*, which has been reported from ancient people of some geographical regions by SZIDAT (1944), PIZZI & SCHENONE (1955), TAYLOR (1955) and JANSEN & OVER (1972).

The second type of eggs, identified as ancylostomid, corresponded in size to those of *Necator americanus*. The reported finding by ALLISON *et al.* (1974) of *Ancylostoma duodenale* in a mummified body from Tiahuanaco, Peru, dated from 900 AD, has been questioned but the present observation gives additional evidence of the presence of human hookworm in a region where there were no Europeans or Africans present at that time. This has been discussed earlier in detail by SOPER (1927) and FONSECA (1970).

The morphology of the larval forms (Fig. 4) resembles that of hookworm larvae, in spite of the deformation caused by the desiccation of the material. Since these also occurred in some of the coprolites in which the ancylostomid eggs were found we can tentatively consider them to have emerged from those eggs.

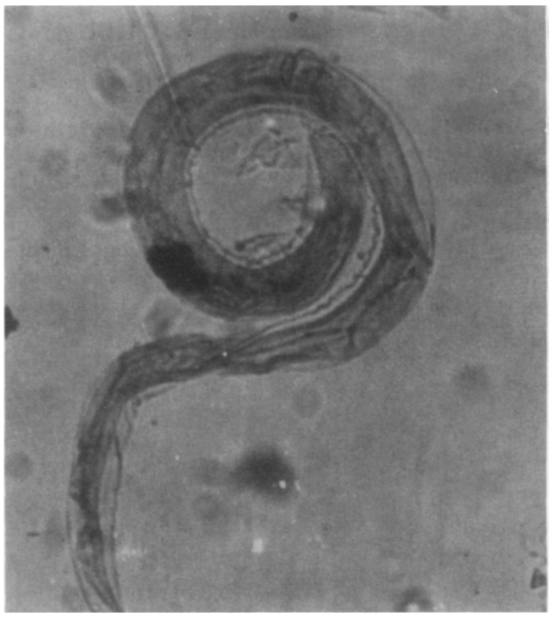

Fig. 4. Ancylostomid larva. × 100.

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Addendum

Vol. 74, No. 3, pp. 307-317.

W. K. Reisen, F. Mahmood and T. Parveen. *Anopheles culicifacies* Giles: a release-recapture experiment with cohorts of known age with implications for malaria epidemiology and genetical control in Pakistan.

Please add the following:

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