

CAPILLARIA IN MAN

A CASE REPORT

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Invasion of unusual hosts by parasitic species must be a very common occurrence, but probably the great majority of such invasions are doomed to failure at the outset. However, there are quite a number of infestations in which the parasite, while having little chance of ultimate survival, is able to proceed through part at least of its life cycle, and possibly cause pathology in its unusual host.

Some of these are well known in man, and have come to be accepted, without appreciation that the normal host-parasite balance no longer applies, and such pathology as may arise may well be different from that which occurs in those hosts able to sustain the parasitic species.

Well-known examples of a parasitic species reaching a dead-end in man are invasion with such parasites as *Trichinella spiralis*, *Echinococcus granulosus* and the cysticercus stage of *Taenia solium*. In these (group I) the larvae reach a stage which would be infective to a subsequent host, and, were it not that humans are seldom eaten, the cycle would be completed. In the case of invasion by the larval stages of *Ancylostoma braziliense* (causing 'sandworm') and *Toxacara canis* (one of the causes of visceral larva migrans), the parasite is unable to reach maturity, and thus the cycle is not completed (group II). In a third group, the parasite, having found itself in a host unsuitable for further development, merely lies up in the hope that such an unsuitable host may be eaten by the right host. Such paratenesis is not uncommon in Pseudophyllidea like *Dibothriocephalus latum*, but may also occur in some nematodes. An interesting example is that of *T. canis*, which, if it invades a bitch, may not complete its cycle, but will await pregnancy when it will traverse the placenta to continue its life in the newborn pup.

This report deals with invasion by *Capillaria hepatica*, which might be classed with the first group, though it has features of the third. Though less than a dozen of these cases have been reported, such infections must be not infrequent, in view of the close association between rat and man.

CASE HISTORY

An African female child, aged 5 years, was admitted to the fever ward of King Edward VIII Hospital, Durban, with a diagnosis of measles, bronchopneumonia and dysentery. Though

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stool examination showed pus, blood and mucus, culture was negative, and the only parasites found were *Ascaris lumbricoides*, *Trichocephalus trichiura* and *Trichomonas hominis*. There was no clinical evidence of liver disease and no blood count was done. The child died on the 6th day.

Necropsy, 3 days later, confirmed the diagnosis of measles, bronchopneumonia and non-specific colitis. The liver, of normal size, was studded throughout with gritty, yellow-white specks of 1-2 mm. diameter, at that time thought to be areas of calcification.

Section (Fig. 1) showed scattered and irregular foci of loose, cellular and, in part, necrotic connective tissue surrounding

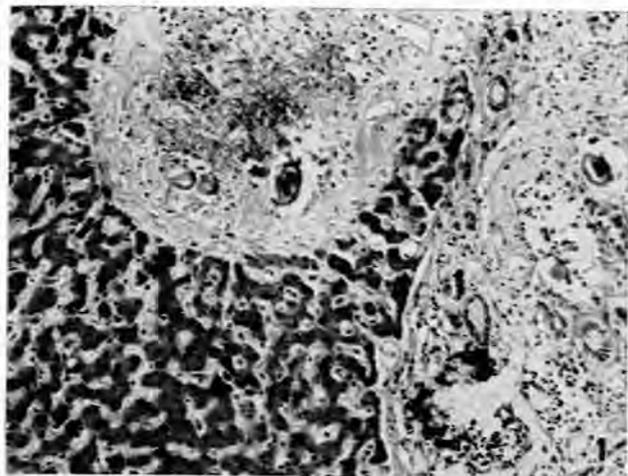


Fig. 1. Section showing the relationship of the worms and ova to the portal tract, and the lack of distortion of parenchymal architecture.



Fig. 2. Section of an ovum showing the opercula, the striations and the segmented embryo.

numerous ova and some remnants of worm. These foci were related to the portal tracts, and were sharply defined from the adjacent apparently normal liver tissue, which showed no distortion of architecture. In this lack of distortion this case differed from that of Cochrane *et al.*¹

In the majority of foci, fibrosis was the prominent feature, inflammatory-cell infiltration not being marked. Most cells present were of chronic inflammatory type, with lymphocytes and plasma cells. There were but few eosinophils, in contrast to the findings in other parasitic infections.

The ova (Fig. 2) were round or oval (60×30 microns) in

cross-section, and in appropriate sections non-protruding opercula could be seen. Between the inner and outer shells radial striations were prominent. The embryo was in many instances clearly segmented. These features serve to distinguish these eggs from those of *Trichocephalus*.

DISCUSSION

Capillaria (Hepaticola) hepatica (Bancroft, 1893) Travassos, 1915, is an aphasmid nematode primarily parasitic in the liver of rodents. Like those of its better-known relative, *T. trichiura*, its eggs must undergo a period of external development before being able to infect a new host. The appropriate conditions of temperature, moisture and availability of oxygen are similar to those required by the eggs of *Ascaris lumbricoides*.

Since the adults and the eggs are imprisoned in the liver, usually in connective tissue, it is difficult to conceive how the eggs reach the exterior, for they are seldom released in the faeces of infected hosts. It is now generally accepted that the eggs can only be released from the liver by putrefaction or by digestion in the gut of another animal, whether a carnivore or a scavenger. It has recently been shown² that the rodents themselves, being cannibals, perform this function. Thus, to complete the cycle, the parasite

passes through 2 animals, the second merely freeing the egg from the tissue of the first and thus permitting the embryo to reach the environment necessary for its further development.

Thus infection of man with this parasite could not follow the eating of rats, but most likely results from the ingestion of rat faeces which have been exposed to the air for some time.

This is the second case of human infection reported in South Africa, the first being that described by Cochrane *et al.*^{1,2}

SUMMARY

A case of human infection with *Capillaria hepatica* is described.

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