On a microphallid metacercaria occurring in the ovaries of the sand crabs *Emerita asiatica* and *Albunea symnista* on the Madras Coast

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MS received 7 July 1976

**ABSTRACT**

A microphallid metacercaria resembling that of *Microphallus nicolli* (*Spelotrema nicolli*) Baer 1943, is reported from the sand crabs, *Emerita asiatica* and *Albunea symnista*, on the Madras Coast and tentatively identified as belonging to the genus *Microphallus*.

The larva is enclosed in a 3-layered spherical cyst, clothed with minute spines in the anterior two-thirds of the body, and shows short, blunt, postero-laterally directed intestinal crura, oval testes overlapped by large lobulated masses of vitellaria, a male genital papilla with no cuticular pockets, and a Y-shaped excretory vesicle.

High infection rates in the hosts were observed, all of 144 *E. asiatica* (16-31 mm long) and 22 of 23 *A. symnista* (13-27 mm long) examined between July and August 1974 having been infected in varying intensities. Strangely, only the female crabs harboured the metacercariae, in the connective tissue of the ovaries, the males being free. The ovary appeared to be the primary seat of infection, though parts of the liver may be involved. Neither the first intermediate host (gastropod), nor the definitive host (shore-birds ?) is yet known.

1. **INTRODUCTION**

Studies on the life-histories of microphallid trematodes of shore-birds have demonstrated the involvement of various crustacean and xiphosuran second intermediate hosts, such as crabs, sand crabs, barnacles, and the king crab.1-11 Of these the sand crab, *Emerita analoga*, had been described as the host of the metacercaria of *Levinseniella cruzi* (?) by Young1 in the La Jolla region, California, USA. The metacercariae, occurring in dozens, were present in the connective tissue, chiefly of the liver lobules, of every crab over 6 mm in size examined.
Young obtained the cercarial stage of this parasite from the gastropod *Olivella biplicata* and identified it as a xiphidiocercaria of the Ubiquita type of Lebour. The metacercariae were tentatively assigned to the species *Levinseniella cruzi* of shore-birds *Limosa fedosa* and *Cataporphorus semipalmatus inornatus*, as experimental transfer of the worm from the sand crab to the bird host was not attempted. The development of the cercaria into the metacercarial stage was followed in three sets of experiments in the crabs. All crabs over 6 mm long had natural infections with metacercariae, while those of 5 mm length or less were less frequently infected and revealed the presence of recently entered cercariae. Within two or three days of entry, the cercaria secreted a cyst within which it lay curled up as a metacercaria. Collectively, in the three sets of experiments, 31 of 62 tests showed successful infection, as against 6 of 46 in the controls. He also observed that larvae similar to those in *Emerita analoga* occurred in fiddler crabs, *Uca crenulata*, of the Mission Bay, near La Jolla, and in many other crabs in the vicinity.

Later, while describing a new species of *Levinseniella*, *L. charadriformis*, from California shore-birds, Young reviewed his earlier work and revised the tentative identification of *L. cruzi* as of *Spelotrema nicolli*, though it differed "in certain minor details". He noted that the presence of all the four species of microphallids, one of *Maritrema*, two of *Spelotrema*, and one of *Levinseniella*, in shore-birds which had "recently fed on *Emerita* and of metacercariae excysting in the stomachs of the birds, is suggestive of the source of infection, but does not show which of the parasites is derived from this source, or whether more than one is so derived". A captive specimen of the stone curlew (*Burhinus*), a charadriform bird, fed with sand crabs on several occasions between July 25 and August 15, 1940, was found on August 21, to harbour many adult worms, and numerous lately excysted juveniles of *Spelotrema*, apparently *S. nicolli*.

Ching referred to the studies of Young under *Microphallus nicolli* Baer 1943, as *Spelotrema* had been synonymized with *Microphallus*. She had also obtained metacercariae from about a hundred mole crabs, *Emerita analoga*, from Santa Barbara, California, identical with *M. nicolli*, adults of which were recoverable from a mouse 33 hr after feeding them. Specimens of *Microphallus* from *Larus glaucescens* in her collection resembled those from *E. analoga*, viz., *M. nicolli*.

The present account, apparently the next one relating to microphallid metacercariae from sand crabs, deals with those encountered in natural infections in the connective tissue of the ovaries of *Emerita asiatica*, as well as *Albunea symnista*, occurring on the shore of the Bay of Bengal in Madras, India.