ON A NEW MYXOSPORIDIAN *HENNEGUYA TACHYSURI* SP. NOV. FROM THE MARINE CATFISH *TACHYSURUS THALASSINUS* RUPPELL FROM THE GULF OF MANNAR

ABSTRACT

Henneguya tachysuri sp. nov. was found in the subcutaneous muscles of the marine catfish *Tachysurus thalassinus* caught off Gulf of Mannar at Tuticorin. The parasite causes bleeding ulcers in the body of *T. thalassinus*. The occurrence of the parasite and its possible damage to the host is of economic interest as *T. thalassinus* is an important commercial fish.

THE INFECTION by myxosporidian parasites of the genus *Henneguya* is reported from many freshwater and two species of marine fishes of Indian waters. So far there is no record of any myxosporidian infection on marine catfishes of the genus *Tachysurus* and the present report is the first of its kind. Chakravarthy (1939) reported the occurrence of a new species *Henneguya ophiocephali* from the murrel with a note on myxosporidian parasitic infection in aquarium fishes. Ganapati (1941) described a new tissue parasite *H. latesi* from the bulbus arteriosus of two marine species of the genus *Otolithus*. Tripathi (1952) described the parasite *H. latesi* from *Lates calcarifer*. Bhatt and Siddiqui (1964) recorded *H. zahoori*, a new myxosporidian parasite from *Ophiocephalus punctatus*. Lalitha Kumari (1965) described a new species *H. quadri* from *Ophiocephalus gachua* while Qadri (1965, 1970) reported the occurrence of two new species of myxosporidian, *H. notopteriae* and *H. ganapathiae* from *Notopterus notopterus*. *Henneguya* has never been reported from the family Tachysuridae.

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During the collection of samples of *Tachysurus thalassinus* some specimens with external bulges and a few others with scattered ulcers on the body were encountered in the trawl catches of Mandapam and Tuticorin during 1970-1971. The infected fishes were of the size range 140-430 mm in total length. A close observation of the infected fish revealed that the external bulges were the subcutaneous cysts of a myxosporidian parasite. A smear of the cyst content showed the occurrence of numerous developed spores of the genus *Henneguya*. The smear was stained with Leishman's stain.

Henneguya tachysuri sp. nov.

Host: *Tachysurus thalassinus* (Ruppell), 140 mm on 21.11.71, 260 mm on 14.12.71 and 400 mm and 420 mm on 17.11.72 from off Mandapam and 390 mm and 400 mm on 18-11-1970 from off Tuticorin were collected.

Habitat: Subcutaneous tissue of *T. thalassinus*.

Description: Vegetative form: Cysts opaque, white or light brown, round or oval, uniform in size (1 to 3 mm in diameter and 0.5 to 1.0 mm in height). Cyst covered by a tough membrane of connective tissue. Mature spores densely packed in the cyst; no developing stages or young spores observed.

Cysts are scattered throughout the body muscle with a concentration in the area behind the dorsal fin on both sides of the body and caudal peduncle. The number of cysts vary from 50 to 200. A few ulcers are seen in the body and the size varies from 2 to 12 mm in diameter and some are bleeding ones (Fig. 1).

Spore: Mature spores (Fig. 2) ovoid in valvular view with broad rounded anterior extremity, posterior part attenuated. Elliptical in sutural view; posterior part drawn into two narrow equal flexible caudal processes; spore membrane with two valves which are separated by a straight sutural ridge; surface smooth spore cavity is occupied by two pyriform polar capsules, each with a narrow distinct duct and opens separately to the exterior; polar capsules equal in size, similar in shape and occupy more than half the length of the spore cavity; two polar capsules placed almost parallel to each other; a spirally, coiled polar filament, showing three

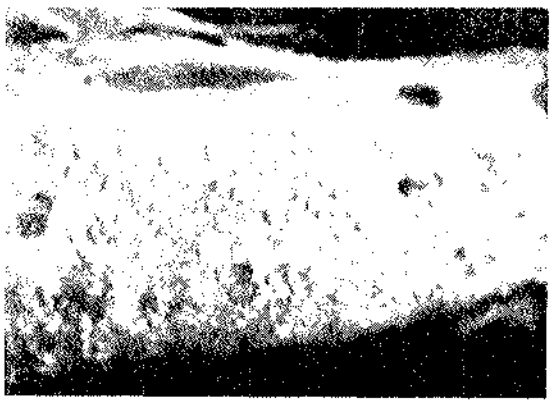

Fig. 1. *Tachysurus thalassinus* showing the cysts of *Henneguya tachysuri* and ulcers on the body.

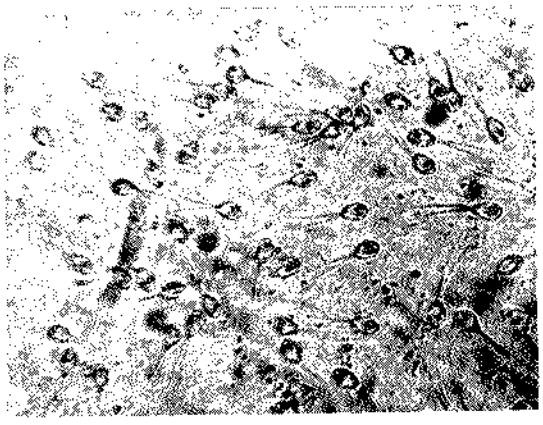

Fig. 2. Photomicrograph of mature spores of *Henneguya tachysuri*.

to five coils visible under high power oil immersion lens; the extruded polar filaments have not been observed even while the spores are treated with dilute potassium hydroxide and sodium hydroxide solutions. The capsulogenous nucleus is situated near the posterior part of the spore cavity. A small iodinophilous vacuole may or may not evident opposite the nucleus at the posterior end of the spore cavity. The tapering caudal processes originate from two triangular flap like structures, characteristic of the species.

Dimensions (based on 32 spores from 3 hosts): Length of spore (excluding caudal process) 12 to 15 μ; breadth 7 to 8 μ; thickness 5 to 6 μ. Length of caudal process 35 to 44 μ; length of triangular flap at the base 2 μ; length of polar capsule 6 to 7 μ; thickness 2 to 3 μ; total length of the spore 47 to 60 μ.

In size and shape of the spore, *Henneguya tachysuri* closely resembles those of *H. salminicola* Ward, *H. zschokkei* (Gurley) and *H. sebasta* Moser and Love. But *H. salminicola* and *H. zschokkei* differ from *H. tachysuri* in host specificity and in the presence of unequal capsules and in the absence of a triangular flap at the base of the caudal processes of the mature spore. However in tissue specificity, sites of infection and pathology *H. tachysuri* closely resembles *H. salminicola*. The present study shows that the cysts of *H. tachysuri* break and secrete a white fluid with innumerable spores and large sized ulcers are formed at the sites of infection. Bogdanova (1957) also found that the cysts of *H. salminicola* break to the exterior, liberating mature spores and ulcers are found at the sites of infection. *H. salminicola* has been found in *Oncorhynchus* sp., *Coregonus* sp. and *Thymallus* sp. from Alaska, USA. and U.S.S.R. In contrast *H. tachysuri* seems to infect only *Tachysurus thalassinus*. *H. sebasta* also differs from *H. tachysuri* in having smaller polar capsules, longer caudal processes and in the absence of a triangular flap. In host and tissue specificity and on the effect on the interior tissue, *H. sebasta* differs widely from *H. tachysuri*. In the presence of the triangular flap at the base of the caudal processes, *H. tachysuri* resembles *H. nusslini* Schuberg and Schroder, 1905, where there is a 'dark part' which is triangular in sutural view and runs into the tail. But the polar capsules of *H. nusslini* is smaller in size and also there is difference in host specificity. *H. otolithi*, a tissue parasite from an Indian marine fish *Otolithus* sp. differs from *H. tachysuri* in tissue and host specificity, in the dimensions of cyst and spores and in the presence of a transverse ridge on the spore. In view of the differences in the dimensions of the cyst and spore, tissue and host specificity and in the presence of a characteristic triangular flap at the base of the caudal processes, it is considered new and designated as *H. tachysuri* after the host. The abundance of parasite in the tissue and the occurrence of bleeding ulcers suggest pathogenicity, but there is no direct evidence of harmful effects of mortality. The possibility of damage to the host is of much economic interest since these fishes are important to the commercial fisheries.

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