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 tamily Tachysuridae.

The author is grateful to Dr. E. G. Silas, Director, Central Marine Fisheries Research Institute, Cochin and to Shri K. V. Narayana Rao Institute for their constant encouragements. The author is also thankful to Prof. P. N. Ganapati, Emeritus Professor, Andhra University for the preliminary identification of the parasite and to Dr. B. Krishnamoorthi suggesting improvements in the manuscript. His sincere thanks due are to Dr. Mike Moser, University of California,

NOTES 197

U.S.A. for providing the valuable literature on the taxonomy of Myxosporidia by D₁. Meglitsch.

During the collection of samples of Tachysurus thalussius 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: Tochysurus 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 Toticorin were collected.

Habitat: Subcutaneous tissue of T. thalassimis.

Description: Vegetative form: Cysts opaque, white or light brown, round or oval, uniform in size (I 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 dersal 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



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

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

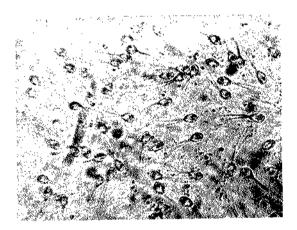


Fig. 2. Photomicrograph of mature spores of Hemicanya tachesuri.

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 198 NOTES

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 tound

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.

Central Marine Fisheries Research Institute, Cochin - 682 018.

N. GOPINATHA MENON

NOTES 199

REFERENCES

BHATT, V. S. AND SIDDIQUI, W. A. 1964. J. Protozool., 11: 314-316.

BOGDANOVA, E. A. 1957. In: Petrushevskii (Ed.) Parasites and Diseases of Fish. pp. 310-317.

CHAKRAVARTHY, M. M. 1939. Arch. Protistenk., 92: 169-178.

GANAPATI, P. N. 1941. Proc. Ind. Acad. Sci., 13 (B): 135-150.

LALITHA KUMARI, P. S. 1965. Riv. Parassit., 26: 79-84.

QADRI, S. S. 1965. Zool. Anz., 175: 225-228.

Vol., pp. 88-93. 1970. Prof. Ganapati Shas. Comm.

ТRІРАТНІ, Y. R. 1952. Rec. Indian Mus., 50: 63-88.