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Gasophthalmus in black sea bream *(Spondyliosoma cantharus)* caused by *Sarcinomyces crustaceus* Lindner

F. Todaro[1], A. Berdar[1], A. Cavaliere[2], G. Criseo[1] & L. Pernice[3]
[1]*Istituto di Microbiologia, Facolta' di Scienze-Universita' di Messina, Italia*
[2]*Istituto Talassografico, Universita' di Messina, Italia*
[3]*Cattedra di Parassitologia Medica, Universita' di Messina, Italia*

Abstract

The authors have noted in a Black sea bream *(Spondyliosoma cantharus)* an example of gasophthalmus, caused by *Sarcinomyces crustaceus,* that did not alter the fish body but it modified its swimming habits.

Introduction

The numerous publications about mycotic diseases of fish, nearly always concern species in fresh water. The genus *Saprolegnia* is the most frequent etiologic agent causing such disease.
Various authors have recently shown that the genus *Saprolegnia* is not the only fungus to be associated to fish diseases and their eggs, but there are many other fungi associated (2, 3, 6).

In 1974 Ajello (2) has isolated a new species of *Phialophora* causing phaeohyphomycosis, and during the same year, Ajello, has individuated and described a new species of *Exophiala, E. pisciphilus,* in a *Ictalurus punctatus* infected by systemic mycosis.

The same author (3) has recorded, in 1977, a phaeohyphomycosis epidemic in *Salmo gairdneri* caused by an opportunistic hyphomycetes belonging to the family of dematiaceous fungi: *Scolecobasidium humicola.*

Our investigation are aimed to extend and make a modest contribution to knowledge about fungi which cause diseases.

swelling of the left eye-ball of a fish belonging to the Sparidae family, Black sea bream *(Spondyliosoma cantharus)* has been described. As such disease was also similar to hydrophthalmus and caused by gas bubbles, the term 'gasophthalmus' has been suggested and adopted by one of us.

The fish (Fig. 1) 31 cms long, which had been in captivity for about 4 years. The lesion in the anti-camera developed in only a few months, without preventing the fish to remain healthy and very active. Furthermore his reflexes were completely normal, but it is was possible to observe that the subject tends to turn on the healthy eye.

Let's mention the various stages of gasophthalmus found in another species *Pagellus bogaraveo,* in captivity in the acquarium. The lesion is generally found in only one eye, which apparently begins to protude as a result of a gas-bubble in its anti-camera. Following the increase of gas-bubbles, the protrusion becomes more noticeable, the cornea becomes opaque and the crystalline lens inactive. At this stage the diseased eye is completely blind. Its movements are carried out with greater difficulty because of the gas-bubbles. Subsequently, the eye loses the gas-bubbles and the swelling. In the place where the cornea was, some silver rainbow coloured tissue was present. Thus the fish regained its normal ability to swim. The hystologic exam shows a disarrangement of the three tunicae, then the loss

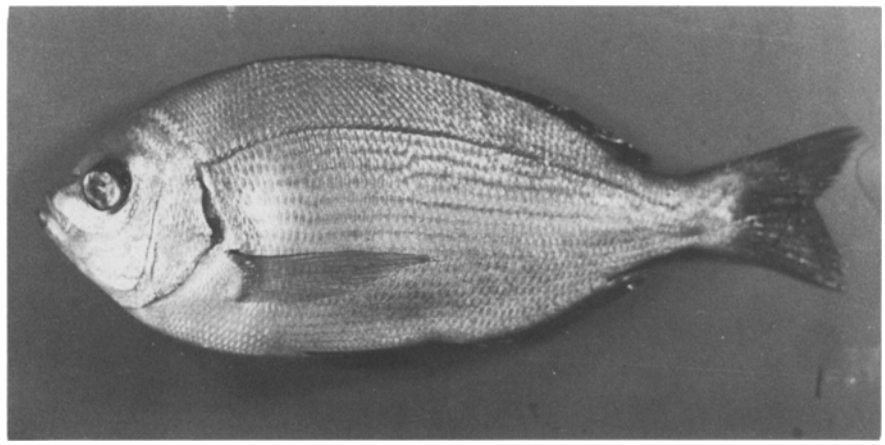

Fig. 1. Spondyliosoma cantharus, the swelling of the left eye-ball due to the presence of air-bubbles.

of the nervous and vascular tunica; and only a part of the fibrous tissue was present. The fish can live for a long time in these conditions (in particular the Grouper). In *Pagellus* the entire loss of the eye-ball, may be found in the last stage.

Mycological studies

The acqueous humor from the ocular globe of a fish affected by gasophthalmus, was inoculated on potato dextrose agar and incubated at 25 °C. After week of incubation smooth and shiny black colonies appeared covered with a mass of slimy conidia. After a month such colonies became crustaceous and a rough black metallic colour.

During microscopic observance hyaline conidia were mainly present, the culture became dark and brown with age, ellipsoidal and normally two-celled. The old cultures during the microscopic observation presented two-celled conidia and many-celled chlamydospores. Hyphae were absent.

Ainsworth's keys(1) were used and De Hoff and Hermanides-Nijhof as (5) well to identify the species. The strain was also sent to the Commonwealth Mycological Institute, kew, and to the Centraal Bureau voor Schimmelcultures of Baarn (Holland) in order to confirm the species.

Discussion

The species isolated by us had been identified as *Aureobasidium pullulans* (De Bary) Arnaud. Dr. Minter of the Commonwealth Mycological Institute identified it as *Sarcinomyces crustaceus* Lindner; while Dr. Samson of the Centraalbureau voor Schimmelcultures: classified it as *Exophiala werneckii* (Horta) von Arx: but the latter underlined the fact that hyphae were absent in our strain.

Ainsworth (1) in the Fungi (1973) classifies *Sarcinomyces* Lindner in synonymy with *Aureobasidium* Viala and Boyer while De Hoog and Hermanides-Nijhof (5) consider *Exophiala werneckii* (Horta) von Arx in synonimy with *Sarcinomyces crustaceus* Lindner, therewith we decided and considered it precise to record the species in our mycologic collection, as *S. crustaceus* Lindner, such hyphomycetes has frequently been isolated from *Tinea nigra palmaris.* Regarding our observations on fish, we have to underline that the fungal disease found in Black sea bream *(Spondyliosoma cantharus)* has never been found in fisn caught at sea. Therefore the cause of a fungal disease in the subject has to be investigated in the unfavourable environments, due to its captivity in an acquarium.

A good number of fungi, in particular the dematiaceous fungi, have been considered as saprophytes in the soil; otherwise pathogens in plants. In the past years it has been noticed that, when the host's natural immunities are weakened, such fungi

can pass from saprophitism, causing diseases in men and animals. In this specific case, captivity, together with its characteristics (chosen food, limited movement, reduced immunization) can be considered as one of those factors which predispose fish to the attack of fungus, living in the open environment in such conditions can reproduce as a parasite in the host's organism. Other researches are in course to determine if this is the only case or if the Dematiaceous fungi have been parasites in other fish.

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