

GASTROSCOPIC, LAPAROSCOPIC AND PATHOLOGICAL FINDINGS IN EXPERIMENTAL ANISAKIASIS IN SEA BASS

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Abstract

In this paper we evaluate and discuss the tissue damage due to *Anisakis* larvae in experimentally infected sea bass (*Dicentrarchus labrax*). This is the first endoscopic and laparoscopic study, that has revealed in two fishes hemorrhages and/or nodules on the serosal surface of the intestine. The evidence of tissue change is an unusual occurrence in *Anisakis* infected teleost fish.

Keywords: Parasitism, Teleostei, Pathology

Introduction

Anisakid nematodes are probably the most known fish parasites, also because of their zoonotic potential. The life cycle of these cosmopolitan parasites involve marine mammals or fish-eating birds as definitive host and various aquatic invertebrate species, teleosts and cephalopod molluscs as intermediate and/or paratenic hosts. The tissue damage evoked by these nematode larvae on their teleost host is generally very low. They can be found on the serosa of coelomic organs without any apparent tissue reaction. However its importance as fish-borne zoonosis, few data demonstrate the possibility of experimental induction of the disease from a fish to another using L3 larvae without intermediate host [2,5]. Moreover imaging techniques have been rarely used in teleost fish. This paper is aimed to show the laparoscopic findings obtained during a challenge with *Anisakis* larvae in one of the most common fish species in Mediterranean aquaculture, as the sea bass, with known susceptibility [1].

Material and Methods

Five fish belonging to the species *Dicentrarchus labrax* were reared in an aerated tank, 650 l, for 60 days, temperature 25°C, salinity 35‰. Fish were anaesthetized using MS-222. The challenge was performed by endoscopy, using 10 alive *Anisakis* larvae inserted into the stomach of each fish. Larvae were obtained by the simultaneous necropsy of three teleost fish belonging to the species *Lepidopus caudatus*. Another challenge with the same protocol was performed 15 days later. At this time, endoscopic exam was carried out. After 60 days, in which fish were daily monitored, an explorative laparoscopy, using a rigid cystoscope, was performed. Fish were carefully examined for *Anisakis* larvae, after induction of pneumocoelom in a way to show all parietal and visceral coelomic surfaces.

Results

Endoscopic exam, after two weeks, revealed the presence of some larvae at level of gastric mucosa. The laparoscopy performed after two months showed, in two teleosts, hemorrhages and/or nodules on the serosal surface of the intestine. Within each of these changes a single nematode larva was detected. In one case a biopsy was performed from a parasitic nodule. The necropsy was performed a week later and such lesions were sampled for histopathology which confirmed the granulomatous-hemorrhagic nature of the tissue changes. Parasites sampled from *L. caudatus* and *D. labrax* were isolated, fixed in 70% alcoholic solution, morphologically identified by light microscope, after diaphanization with lactophenol, as *A. pegreffii* in both *L. caudatus* and *D. labrax*.

Discussion

This paper represents the first endoscopic and laparoscopic study of an experimentally induced parasitic disease [2,3,4,5]. The evidence of tissue change is an unusual finding in *Anisakis* infected teleost fish. The change here described could be explained because of the high susceptibility of the sea bass towards this parasite, almost never found in wild specimens in Mediterranean, probably in relation to the diet that normally does not include other intermediate hosts. Nevertheless the finding of hemorrhages could also be related to the acute stage of the infection.

References

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