Vet. Med. J. Giza 38, No. 2, 297-301 (1990)

CRYPTOSPORIDIOSIS AMONG FRESH WATER FISH IN EGYPT

BY

NAGWA EID* AND MOSAAD HILALI**

* Parasitology Dep. Faculty of Veterinary Medicine, Benha Branch, Moshtohor Zagazig University, Egypt.
** Parsitology Dep., Faculty of Veterinary, Cairo University, Egypt.

(Received.3 . 4.1990)

INTRODUCTION

Cryptosporidiosis is caused by a protozoan parasite of genus *cryptosporidium (Apicomplexa Coccidia)* which was firstly recognized from mice in the beginning of this century (Tyzzer, 1907). Since then the parasite was reported from a broad range of vertebrate hosts (Fayer and Unger, 1986). The organism grows and reproduce mainly at the surface of the epithelial cells of the digestive and respiratory tract of vertebrates. *Cryptosporidium* was thought to be rare, host specific and nonpathogenic, however, in the last 15 years reports from different countries had confirmed its ubiquitous and nonspecific nature (Fayer and Ungar 1986).

The 1st case of enteric cryptosporidiosis among fish was reported in tropical sea fish Naso lituratus (Hoover et al., 1981). They proposed to name this parasite *Cryptosporidium (nasoris)* because they supposed cryptosporidians to be host-specific. Pavlasek (1983) reported cryptosporidium in carp *(cyprinus carpio)* from Czechoslovakia Cryptosporidia was reported from some fresh water fish in Upper Egypt (Hefnawy, 1989).

The aim of this report is to examine fresh water fish *(clarias lazera* and *Tilapia nilotica)* from Toukh,

Qualiobia Governorate, Egypt for cryptosporidiosis.

MATERIALS AND METHODS

A total number of 41 *clarias lazera* and 20 *Tilapia nilotica* were cought from small branches of the River Nile at Toukh, Qualiobia Governorate, Egypt (40 km north Cairo City) during the period from 1st September 1989 to 1st March 1990. Mucosal smears were prepared from the small and large intestine of each fish. The smears were air dired, fixed with methanol and stained with modified Ziel Neelsen (Henriksen and Pohlenz, 1981). For confirmation of positivity another smear was prepared from each case and stained by Safranin-methylene blue (Baxy et al., 1984).

For studying the infectivity of the cryptosporidium oocysts for mice, the intestinal contents of positive fish were suspended in sheather sucrose solution. The oocysts were concentrated by floatation method and then washed in distilled water. Counting of the oocysts per cubic ml was carried out using haemocytometer.

Ten, one day old mice were inoculated each directly in the stomach with 5000 oocysts using syringe. Five, one day old mice were used as non-infected control. Faecal smears from the infected and control mice were examined daily (after staining with modified Ziehl Neelsen) for the presence of *cryptosporidium* oocysts.

RESULTS

Cryptosporidium oocysts were reported from 9*Clarias lazera* (21.95%) while *Tilapia nilotica* were free. The oocysts were rounded or oval in shape. The dimensions of 50 oocysts varied from 3-4 um x 3-3.6 µm with a mean of 4,3 ± 1.2 x 3.5 ± 0.50. Infected fish suffered from diarrhoea. Faecal examination of the inoculated and control mice revealed negative result

for *cryptosporidium* for 20 days post-inoculation.

DISCUSSION

Cryptosporidium was reported to induce progressive disease in tropical marine fish (Naso lituratus) inducing digestive disturbance, mal nutrition, intermittent anorexia, regurgitation of food and passage of faeces containing undigested food (Hoover et al., 1981). The parasite was also reported from carp fish (Cyprinus carpio) in Czechoslovakia by Pavlasek (1983) and from some fresh water fish in upper Egypt without referring to its pathogenicity (Hefnawy, 1989).

In the present study *cryptosporidium* spp. was reported from 21.95% of *Clarias lazera* and none from *Tilapia nilotica*. Hefnawy (1989) reported *cryptosporidium* spp. from upper Egypt in 30% of *Tilapia nilotica*, 20% of *clarias lazera* and 10% *Bagrus bayad*.

These result indicated that *cryptosporidia* ia prevalent among fresh water fish in Egypt. It is not likely that the parasite identified in the present study is of mammalian origin since experimental infection of mice revealed negative results. This view is also supported by the suggestion of Levine (1984) on the taxonomy of the genus: *Cryptosoporidium*, who concluded that there are four valid species one for each vertebrate class (mammals, birds, fish and reptiles).

Further studies are needed to clarify the pathogenicity of the parasite in experimentally infected fish. Also the prevalence and epidemiology of the parasite in the fresh water fish from the different localities of Egypt should be also investigated.

SUMMARY

A total number of 41 *Clarias lazera* and 20 *Tilapia nilotica* were cought from small branches of the River Nile at Toukh-Qualiobia Governorate Egypt, during the period from 1st September 1989 to 1st March 1990. Mucosal smears from the small and large intestine of each fish were prepared and stained with modified Ziel Neelsen. For confrimation of positive cases another smears from each case was stained by Safranin Methylene blue stain. Cryptosporidium oocysts were recorded in *clarias lazera* (21.95%) while *Tilapia nilotica* were free.

Experimental inoculation of each of 10 mice, one day old with 5000 oocysts obtained from positive cases revealed negative results.

REFERENCES

1. Baxby, S., Bundell, N. and Hart, C.A. (1984): The development and performance of a simple, sensitive method for the detection of cryptosporidium oocysts in faeces. J. Hyg., 93, 3]7-323.

2. Fayer, R. and Ungar, B.L.P. (1986): Cryptosporidium Spp. and Cryptosporidiosis. Microbiol. Rev., 50, (4): 458-483.

3. Hefnawy, Y. (1989): Cryptosporidium affection of fresh water nile fish in Assuit Province Assiut Vet. Med. J. 21-41.

4. Henricksen, S.A. and Pohlenz, J.F.L. (1981): Staining of cryptosporidia by a modified Ziehl-Neelsen technique. Acta. Vet. Scand, 22, 594-596.

5. Hoover, D.M., F. Hoerr and W.W. Carlton,(1981): Enteric Cryptosporidiasis in a nasotang, Naso Lituratus.Bloch and Schneider, J. Fish. Dis., 4: 425-428.

6. Levine, N.D. (1984): Taxonomy and review of the coccidian genus Cryptosporidium (Protozoa Apicomplexa). J. Protozool 31,94-98.

7. Pavlasek, I. (1983): Cryptosporidium sp. in Cyprinus Carpino Linne, 1758 in Czechoslvakia. Folia Parasitologica (Praha) 30: 248.

8. Tyzzer, E.E. (1907): Asporozoan found in the peptic glands of the common mouse. Proc. Soc. Exp. Biol. Med. 5: 12-13.