قسم الرقابة الصحية على الاغذيـــــــة
كلية الطب البيطري ـ جامعة أســـيوط
رئيس القسم : أ٠د/توفيق ابسيونـــــي

مدي اصابة الاسماك النيلية بطفيل الكربتوسبورديم
بمحافظة أســـيوط

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تعتبر الاسماك من الصناعات المنتجة فى مصر نتيجة للزيادة المطرده فى عدد السكـــان وحيث أن هذه الاسماك تلعب دور العائل الوسيط لكثير من الطفيليات مما جعل الانســـــان والحيوان عرضة للاصابة نظرا لاتساع مدي الاصابة بهذه الطفيفيات وعدم تخصصهـــا ٠

لدراسة مدي تواجد طفيل الكربتوسبورديم فى أمعاء بعض الاسماك النيلية تم فحص مـــائة سمكة من أنواع البلطى ، القرموط ، الشال ، البياض والشلبه بواقع عشرون عينة من كل نـــــوع جمعت من أماكن مختلفة بأسواق بيع السمك بأسيوط ٠

بالفحص الباراسيتولوجى وجد أن نسبة الاصابة بطفيل الكربتوسبورديم ١٢٪ ولقـــد عـــــزل هذا الطفيل من أمعاء سمك البلطى والقرموط والبياض ووجد أن أكثر هذه الاسماك اصابـــة هـــــو البلطى (٣٠٪) وأقلها هو البياض (١٠٪) ولم يستدل على وجود الطفيل فى أمعاء سمك الشـــــال والشلبه وتعتبر هذه الدراسة هى الاولى من نوعها فى مصر العليا لعزل هذا الطفيل من الاسماك ٠

تم مناقشة خطورة هذا الطفيل على صحة الانسان والحيوان ومايجب اتباعه من اشتراطـــات صحية لدرء خطورة هذا الطفيل على صحة المستهلـــك ٠

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CRYPTOSPORIDIUM AFFECTIONS OF FRESH WATER NILE FISH IN ASSIUT PROVINCE

(With One Table)

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SUMMARY

In a study conducted to investigate the incidence of the protozoan parasite Cryptosporidium in Nile fishes 100 specimens were studied. The intestinal contents of fishes belonging to Tilapia nilotica, Clarias lazera, Synodontis schall, Bagrus bayad and Schilbe mystus were surveyed for parasitological examination. The recovery rate was 12% according to species of which Tilapia nilotica (30%), Clarias lazera (20%), and Bagrus bayad (10%) proved to be natural hosts of Cryptosporidium. The pathogenicity of the parasite which is now regarded as a newly-emergent zoonosis was discussed.

INTRODUCTION

Fish has become a highly productive industry in Egypt due to the presence of a rapidly expanding human population. Fishes as substitutes of animal proteins are considered nowadays most inviting. They represent one of the best nutritious, relatively cheap food stuff, if comared with other animal protein sources. Nevertheless, a number of parasites with larval stages in fresh water Nile fish have a piscivorous mammalian carnivore as their normal final host and are able to infect man because of low host specificity of the adult stage (IMAN, et al. 1987 and MAHMOUD, et al. 1987).

Cryptosporidium is a coccidial parasite belonging to the same family as Isospora, Sarcocystis and Toxoplasma. The organism consists of an oocyst containing 4 sporozoites and a crystalline residual body. The oocysts are excreted in the faeces of the host and they appear spherical in shape and range in size from 4 to 5 um (AHOURAI, et al. 1985; CURRENT, 1985 and O'DONOGHUE, 1985).

Cryptosporidia occur world-wide, can infect man, animals, birds and fish, and do not seem to be host-species specific (JOKIPH, et al 1983; TZIPORI, 1983; CURRENT, 1985 and O'DONOGHUE, 1985). Infections in fish have only recently been reported in the literature and one of which described a progressive illness characterized by intermittent anorexia, regurgitation of food and passage of faeces containing apparently undigested food (HOOVER, et al. 1981).

The aetiology of gastro-intestinal infections often remain unknown despite tests for all recognized causative agents. The acceptance of Cryptosoridium as a cause of diarrhea in man is also supported by information from outbreaks in domestic animals (ANGUS, et al. 1982; JOKIPH, et al. 1983 and O'DONOGHUE, 1985). However, clinical infection in man have involved persistent

diarrhea accompanied by malabsorption, abdominal pain, fever and vomiting (JOKIPH, et al. 1983). Cryptosporidium also has been reported to cause respiratory and biliary infections in immune-deficient persons (FORGACS, et al. 1983).

However, Nile fish internal protozoa in Egypt attracted the least attention of the concerned workers, therefore, this study was undertaken to investigate the presence of cryptosporidia in some popular fresh water Nile fish in Assiut.

MATERIAL and METHODS

Five popular Nile fish species have been selected for the present investigation, Tilapia nilotica, Clarias lazera, Synodontis schall, Bagrus bayad and Schilbe mystus. Hundred fishes (20 from each species) were obtained from Assiut fish markets, either alive or fresh.

Demonstration of the organism by microscopic examination of the intestinal contents for oocysts was done according to the technique adopted by HENRIKSEN and POHLENZ (1981) and GARCIA, et al. (1983) as follows: The intestinal contents were treated by 10% formalin and centrifuged at 650 r.p.m. for two minutes. The supernatant fluid was discarded and an equal amount of 10% formalin was added to the sediment. Then 0.1 to 0.2 ml of the thoroughly mixed sample was transferred to another 15 ml centrifuge tube and 1 to 2 drops of 10% formalin was added.

One drop from the diluted sediment was spread on a microscope slide and allowed to dry in air then stained with moidifed Ziehl Neelsen stain. The Ziehl Neelsen modification was: concentrated carbol fuchsin (1.0 gm of fuchsin, 10 ml of ethanol, 90 ml of 5% phenol) for 20 min., two 2-min. rinses with tap water, 5% sulphuric acid, a 2-min. rinse with tap water, counterstaining with alkaline methylene blue (1 part 5% sod. carbonate with 4 parts 1% methylene blue), four 1 min. rinses with tap water, and air drying. The prepared slides were examined for oocysts with oil objective.

RESULTS

The examination of fishes belonging to Tilapia nilotica, Clarias lazera and Bagrus bayad revealed that they were natural hosts for cryptosporidia as illustrated in Table (1).

Table (1)
Rate of infection with Cryptosporidium spp. recovered from intestines of fish

Fish species	No. of examined fish	No. of infected fish	%*
Tilapia nilotica	20	6	30
Clarias lazera	20	4	20
Synodontis schall	20	none	0
Bagrus bayad	20	2	10
Schilbe mystus	20	none	0
Total	100	12	12

* Infestation percent was calculated according to species.

The Cryptosporidium oocysts in intestinal contents smears appeared as round, densely stained red bodies with blue granules. Their diameter varied from 3 to 5 um.

DISCUSSION

The protozoan parasite Cryptosporidium has gained better recognition over the last decade as enteropathogen in a wide variety of host animals. Prior to 1975, infections were thought to occur infrequently and to be largely asymptomatic in nature. However, recent studies have revealed the organism to be more prevalent and pathogenic than previously thought. Infections producing clinical disease have been recorded in numberous host species including man and the organism is now regarded as a newly emergent zoonosis (O'DONOGHUE, 1985).

The main finding of this study was the 12% incidence of cryptosoridial oocysts in the intestinal contents of some Nile fishes where Tilapia nilotica, Clarias lazera and Bagrus bayad proved to be infected with the organism. O'DONOGHUE (1985) reported that surgeon fish and carp are known hosts of cryptosporidia. Further, isolation of Entamoeba, Hexamita, Balantidium, Eimeria, Myxobolus and Henneguya organisms from Clarias lazera, Synodontis schall and Tilapia zilli was recorded by IMAM, et al. (1987). Some investigators recorded several blood protozoa from Nile fishes (FAHMY, et al. 1971 & 1975).

Mature oocysts were found to be strongly resistant to many disinfectants but their infectivity was destroyed by exposure to ammonia and 10% formal saline (CAMBELL, et al. 1982). Oocysts also proved to be quite resistant to temperature variations and infectivity was lost only after freezing or heating to 65°C for 30 minutes (TZIORI, 1983).

However, infection of man can occur either through contaminated hands with the intestinal contents during evisceration and cleaning of fish or through eating of insufficiently cooked fish specially grilled one.

The present record of Cryptosporidium spp. oocysts was the first record of coccidian parasites of the family Cryptosoridiidae in Upper Egypt.

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