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MYXOBOLUS CLARII N. SP. IN THE TESTIS
OF THE FISH CLARIAS LAZERA FROM THE
RIVER NILE OF ASSIUT.

(With one Table & 4 Fig.)

By

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**ميكروبولس كلاري نوع جديد من الطفيليات الميكروسبوريديا
التي تصيب السمكة النيليه كلارياس لازيرا
بمحافظة أسيوط**

أحمد منصور ، أحمد جلال ، جمال غايه

تم وصف هذا النوع الجديد من طفيليات الميكروسبوريديا من الجويصلات التي جمعت من
خصية السمكة النيليه كلارياس لازيرا في محافظة أسيوط هذا وقد وصف هذا النوع وصفاً تفصيلياً
وتقوّن بالأنواع الأخرى القريبه له من نفس الجنس. وقد أجريت دراسات هستوكيميائية على جراثيم
وجويصلات هذا النوع وأتضح أن الفراغ اليود في أسبوروبلازم الجرثومه لا يحتوى على جليكوجين
ولكن الجليكوجين موجود بين جدار الجرثومه والحافه الخلفيه لاسبوروبلازم الجرثومه.

MYXOBOLUS CLARII & FISH

SUMMARY

A new species of *Myxobolus* (Myxosporidia: Sporozoa) has been found in the testis of a freshwater fish *clarias lazera* in the form of microscopic cysts. The cysts were 0.5-1.5 mm. by 0.5-1.0 mm. (average 1.0x0.75 mm.). The spores were 9-12.21x7.50-9.90u. (average 10.61x8.7u) with two equal polar capsules measuring 3.50-4.78x2.15-2.74u (average 4.14x2.45u). The spores contained iodophilous vacuoles within their sporoplasm. The histochemical studies were carried out on the cyst wall and spores.

INTRODUCTION

Myxosporidia are protozoan parasites usually found in the gall bladder, urinary bladder, liver, spleen, kidney, heart, brain or in other organs of both salt and fresh water fishes and occasionally in amphibia and reptiles (KUDO, 1950, MANWELL, 1961 and KUDO, 1966).

KUDO (1966) stated that Myxosporidia is divided into two suborders on the basis of the shape and structure of the spores, Unipolarina and Bipolarina Tripathi, 1948. Ten families have so far been described:

Coccomyxidae, Ceratomyxidae, Trilosporidae, Wardiidae, Sphearosporidae, Myxosomatidae, Myxobolidae, Chloromyxum, Hexocapsulidae and Myxidiidae.

Common genera of Myxosporidia are:

Ceratomyxa, Leptotheca, Myxoproteus, Mitrastora, Wardia, Chloromyxum, Sinuolinea, Sphaerospora, Coccomyxa, Henneguya, Myxobilatus, Myxobolus, Thelohanellus, Unicauda, Agarella, Myxosoma and Myxidium.

The present work deals with morphological and histochemical studies of a new species of *Myxobolus*.

MATERIAL AND METHODS

One hundred freshwater fish "Garmoot", *Clarias lazera* (CUVIERS and VALENCIENES, 1840) were caught from the River Nile of Assiut, Egypt. Microscopic cysts were present in the testis. Some of the cysts were squashed between two slides to produce free spores. Lugol's iodine was added to some of these films to stain the iodophilous vacuole.

The polar filaments were extruded by the addition of 5% KOH or saturated urea solution. Giemsa stained smears were also prepared. Other cysts were fixed either in formal-alcohol or Bouin's solution. The cysts were then embedded in paraffin wax as usual. Paraffin sections were stained either with Haematoxylin & Eosin, or with certain histochemical reagents (periodic acid Schiff's & Best's carmine).

RESULTS

The parasite was found in 20% of fish examined. cysts were always morphologically identical; they appeared white in colour, oval, or elongated in shape, measuring 0.5-1.5 mm. by 0.5-1.0 mm. (average 1.0×0.75 mm.). The spores (Fig. 1,2) were oval in shape, with slightly pointed anterior end and rounded posterior end, measuring $9-12.21 \times 7.50-9.90 \mu$. (average $10.61 \times 8.7 \mu$). Two equal polar capsules were situated at the anterior end, measuring $3.50-4.78 \times 2.15-2.74 \mu$. (average $4.14 \times 2.45 \mu$), with a polar filament measuring $22.57-35.57$ (average 29.07μ) in length when fully extruded but when it is resting inside the polar capsules, it consisted of 5 coils. The ratio of polar capsule/spore length equals 0.41μ . When Lugol's iodine was added a brownish rounded mass was detected within the sporoplasm of the spores usually known as iodophilous vacuoles measuring $1.37-2.74 \mu$. The sporoplasm was finely granular. One sporoplasmic nucleus was visible, it measured $0.75-1.37 \mu$.

Haematoxylin and eosin stained sections showed that the cyst (Fig.3) was composed of the two layers, the outer one consists of a very thin collagen. The inner layer (cyst wall proper) consists of projecting short processes (cytophaneres) and an inner nucleated layer containing sporoblasts (metrocytes). The fully developed spores are present inwards.

Periodic acid Schiff's stained sections, showed that the layers of the cyst wall were positive. The iodophilous vacuole and sporoblasts were rounded, deep red in colour, P.A.S. positive.

Best's carmine-stained sections, showed that the iodophilous vacuole was free from glycogen. The presence of a red crescent-like structure (Fig.4) between the wall of the spore and posterior border of the sporoplasm, may indicate the presence of glycogen in this structure.

DISCUSSION

Since the spores contained two polar capsules at their anterior end, and the sporoplasm contained an iodophilous vacuole, then the parasite is related to the family Myxobolidae Thelohan, 1892. Moreover, the characters of the present parasite are identical with those of genus *Myxobolus* BUTSCHLI, 1882.

Many species of *Myxobolus* have been described from fishes by many authors such as: BHATT and SIDDIQUI (1964), SEENAPPA and MANOHAR (1981), WALLIKER (1969), FAHMY et al. (1971) and ABED (1987).

When the present material is compared in details with previously described species, it is clear that the present parasite is not comparable with *Myxobolus niloticus* described by FAHMY et al., (1971), since the host, habitat and size of the spores with its polar capsules differ from the present material (table 1).

The parasite under discussion is more or less morphologically identical with *Myxobolus* sp. (type 4) described by ABED (1987). However, the present parasite is recovered from a different fish *CLARIAS lazera*, while *Myxobolus* sp. (type 4) was described from the fish *Barbus bynni*.

Moreover, the chemical nature of the iodophilous vacuole of the present parasite is a crescent-like body between the wall of the spore and the posterior border of the sporoplasm. While it is a rounded structure in *Myxobolus* sp. (type 4) described by ABED (1987) (table 1).

From the present interpretation it is quite clear that the species under discussion is a new one to which we propose the name *Myxobolus clarii* sp. nov with the following diagnostic characters:

Host: *Clarias lazera*.

Location: testis.

Locality: River Nile at Assiut A.R. Egypt.

Size of the cyst: 1.0x0.7 mm.

Size of the spore: 10.61x8.7u.

Size of polar capsules: 4.14x2.45u.

Length of polar filament: 29.07u.

No. of coils: 5 coils.

Type material: Deposited in Department of parasitology, Faculty

of Medicine, Assiut University and the Department of Zoology, Faculty of Science, Assiut University.

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MYXOBOLUS CLARII & FISH

(Table 1) :

Characters	Myxobolus niloticus Fahmy et al., 1971	Myxobolus sp. (type4) Abed 1987	The present material
Host	Labeo niloticus	Barbus bynni	Clarias lazera
Habitat	cysts from fin rays	cysts from fins & within mouthy cavity	cysts from testis
Locality	River Nile of Assiut	River Nile of Assiut	River Nile of Assiut
Spores	10.25-11.75 u. by 6.3-7.8 u.	8.96-10.63 by 6.47- 7.45 u.	9-12.21 X 7.50-9.90 u.
Polar caps- ule	unequal in size	equal in size 2.87-3.53 by 1.86- 2.14 u.	equal size 3.50-4.78 X 2.15- 2.74 u.
Long	5.2-6.8 u by 2.5- 3.3.3 u.		
Short	2.6-4.3 u. by 1.4- 1.7 u.		
Polar filament		23.45-27.3 u.	22.57-35.57 u.
Long	76-84 u.		
Short	23-26 u.		
No. of coils	not mentioned	4 coils	5 coils
Structure & size of the cyst wall	thick collagen 10-15u. & the germinal layer lining the capsule	collagen 0.7-1.75 u. the inner layer, cyto phaneres	Very thin collagen & short cytopha- neres.
Shape of iod. vacuole	brownish rounded mass	rounded to elliptical in shape	brownish rounded mass.
Chemical nat- ure of iod.vac.	free from glycogen	glycogen	free from glycogen
Sporoplasm	not mentioned	moderate granular	finely granular
Nuclei	not mentioned	two nuclei, each mea- sures 1.23-2.28u.	one sporoplasmic nucleus measure- s, .75-1.37 u.

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Fig.1 :
Spores of Myxobolus clarii (x 1250).

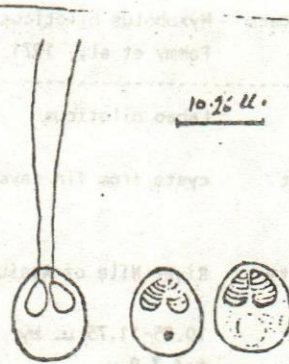


Fig 2. :
Spores of Myxobolus clarii (Camera-lucida drawings).

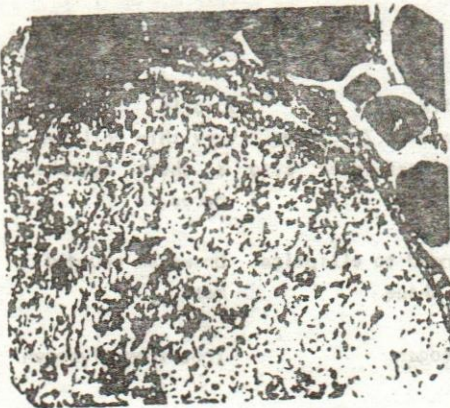


Fig 3 :
T.S. through the cyst wall of Myxobolus clarii (x 500).



Fig 4 :
Best's carmine-stained sections showing a crescent-like body between the wall of the spore and the posterior border of the sporoblast (x 640).