DIPLOZOID SPECIES (MONOGENEA) PARASITIZING GILLS OF SOME CYPRINID FISHES FROM TIGRIS RIVER PASSING THROUGH TIKREET CITY, SALAH AL-DEEN PROVINCE

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ABSTRACT

During the period from October 2007 to April 2008, a total of 114 specimens of five cyprinid fish species were collected from Tigris river passing through Tikreet city, Salah Al-Deen province. These fishes were examined for monogenean parasites belonging to the family Diplozoidae. The following parasites were recorded with their percentage incidence of infection: *Diplozoon barbi* from both *Cyprinion macrostomum* (4.2%) and *Cyprinus carpio* (18.2%), *Diplozoon paradoxum* from *C. macrostomum* (2.1%), *Paradiplozoon bliccae* from both *C. macrostomum* (13.7%) and *C. carpio* (18.2%) and *Paradiplozoon pavlovskii* from *Chondrostoma regium* (25%), *C. macrostomum* (12.6%) and *C. carpio* (9.1%). Both *Barbus barbulus* and *Capoeta trutta* were negative for parasites.

The occurrence of *Paradiplozoon bliccae* in the present study is considered as a new record in fishes of Iraq. Full description with measurements of this parasite were demonstrated. Also, two hosts were recorded for two parasites in Iraq.

INTRODUCTION

Diplozoids are monogenean parasites that inhabit gills of fishes. They are generally considered as parasites of cyprinid fishes (11). Their life cycle is direct, including free-swimming oncomiracidium and a post-oncomiracidial stage known as a diporpa (13). In adult life, two larvae fuse permanently into a pair. Each individual differentiates into two portions: a foliate anterior portion and a posterior portion known as the opisthaptor which contains the holdfast apparatus of the worm. The vitellaria and almost all internal organs are situated in the anterior part of the body. Female and male reproductive organs and the terminal part of the gut are situated in the posterior part. The attachment apparatus of the adult consists of four pairs of clamps and a pair of small median hooks situated on the ventral side of the opisthaptor of each worm (8, 9). The most important criteria for determination of diplozoids are the length of the median hooks, the shape of clamp sclerites and the shape of the posterior part of body (13).

It is well known that diplozoids may cause damage to the gills, which results in a decrease in the respiratory function of the gills. Gills of infected fishes appear pale and destructive (7).

According to Mhaisen (14), a total of eight species of diplozoids are, so far, recorded from freshwater fishes of Iraq. These belong to three species of *Diplozoon*, one *Eudiplozoon* and four *Paradiplozoon* (2, 4, 5, 6, 12, 17, 18).

Few research projects have been carried out on the parasitic fauna of fishes of Tigris river passing through Salah Al-Deen province. These included those of Abdul-Ameer (1), Nawab Al-Deen (16), Muhammed (15) and Al- Jawda et al. (3).

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Due to the scarce information about the parasites of the freshwater fishes of Tigris river passing through Salah Al-Deen province, the present study was aimed to contribute on the diplozoid parasitic fauna of some fish species from this province.

MATERIALS AND METHODS

The fishes of the present study included five species. They were collected during the periods from October 2007 to April 2008 from Tigris river passing through Tikreet city at Salah Al-Deen province.

The monogenean diplozoids were collected from the infected gills of the fishes, pressed between two slides, wrapped with a thread, fixed in 70% ethanol for about 24 hours and then stained with acetocarmine (4). Their diagnosis was according to Gussev (10). All measurements were done by using slide micrometer. Drawings were aided by using a drawing tube attachment with light microscope. The index-catalogue of parasites and disease agents of fishes of Iraq (14), was followed to minimize the number of references cited and to refer to the number of previous hosts for each of these parasites in Iraq.

RESULTS AND DISCUSSION

Throughout the period of the present project, a total of 114 fish specimens were collected. These included one *Barbus barbulus*, four *Chondrostoma regium*, 95 *Cyprinion macrostomum*, 11 *Cyprinus carpio* and three *Capoeta trutta*. All these fishes were inspected for monogenean parasites. *B. barbulus* and *C. trutta* were negative for parasites. The remaining fish species were infected with one or more parasite species. Four diplozoid species were recorded in the present study. The following is a brief account on the occurrence of such parasites.

Diplozoon barbi Reichenbach-Klinke, 1951

This parasite was detected from gills of *C. macrostomum* with an incidence of 4.2% and from *C. carpio* (18.2%) of the present study. Its first report in Iraq was from three fishes (*C. regium*, *Chondrostoma nasus* and *C. carpio*) from Tigris river at Baghdad city (18). After that, it was reported from four different fish hosts including *C. macrostomum* (14).

Diplozoon paradoxum Nordmann, 1832

This parasite was detected in the present investigation from gills of *C. macrostomum* with an incidence of 2.1%. Al-Saadi (5) reported this parasite for the first time in Iraq from gills of *Barbus luteus* captured from Al-Husainia creek in Karbala province. After that, it was recorded from gills of *Aspius vorax*, *C. carpio* and *Liza abu* from Euphrates river passing through Al-Musaib city (6). So, *C. macrostomum* of the present study now represents the fifth host record for *D. paradoxum* in Iraq (14).

Paradiplozoon bliccae (Riechenbach-Klinke, 1961) (Fig. 1)

This parasite was recorded in the present study from gills of *C. macrostomum* with an incidence of 13.7% and from *C. carpio* (18.2%). *P. bliccae* had not been reported earlier from fishes of Iraq (14). Therefore, it now represents a new additional record to the parasitic fauna of fishes of Iraq. The following is a brief account on its description and measurements (Fig. 1).

Body length 2.00-5.90 mm, width 0.90-1.52 mm. Length of anterior portion of body 0.05-0.07 mm. Length of median hook with its spike 0.020-0.028 mm, handle 0.050-0.059 mm. Size of clamps; I: 0.05-0.09 × 0.08-0.15 mm; II: 0.05-0.11 × 0.10-0.16 mm; III: 0.05-0.11 × 0.11-0.17 mm; IV: 0.06-0.11 × 0.11-

0.21 mm. Egg oval with very long spiral twisted pedicle, was 0.24-0.25 × 0.09-0.10 mm in size.

The characteristics and measurements of *P. bliccae* of the present study agreed with those of *P. bliccae* reported by Gussev (10).

Paradiplozoon pavlovskii (Bykhovskii *et* Nagibina, 1959)

This parasite was recorded in the present study from gills of *C. regium* with an incidence of 25%, from *C. macrostomum* (12.6%) and from *C. carpio* (9.1%). Its first occurrence in Iraq was from gills of *Aspius vorax* from Mehaijeran creek, south of Basrah (12). According to Mhaisen (14), *P. pavlovskii* has ten hosts in Iraq (including *A. vorax*), but it was not reported from *C. carpio*. Therefore, *C. carpio* of the present investigation is considered as a new host for *P. pavlovskii* in Iraq.

Finally, the recording *P. bliccae* in the present study, the total number of the diplozoids, so far recorded in Iraq, became nine species. It is appropriate to mention here that unidentified species of diplozoids were reported from ten species of fishes in Iraq in addition to the record of diporpa larvae from three fish species (14).

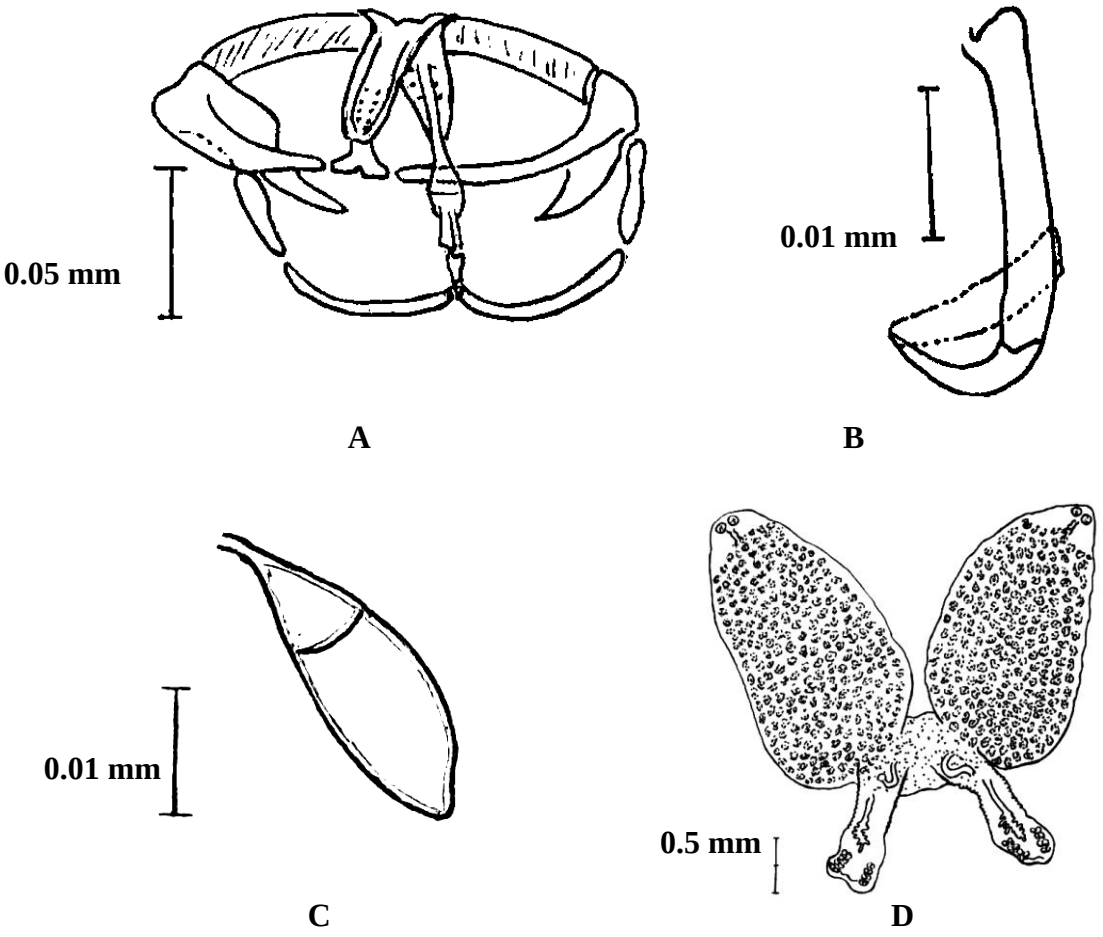

Fig (1): *Paradiplozoon bliccae*.
A: Chitinoid clamp, B: Median hook, C: Egg, D: Whole mount.

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أنواع عائلة Diplozoidae (المخرّمات أحادية المنشأ) المتطفلة على بعض الأسماك الشبوطية من نهر دجلة المار في مدينة تكريت، محافظة صلاح الدين

فاطمة شهاب الناصري

الملخص

في أثناء المدة من شهر تشرين الأول 2007 وحتى شهر نيسان 2008، تم جمع 114 نموذجا يعود إلى خمسة أنواع من أسماك العائلة الشبوطية من نهر دجلة المار بمدينة تكريت، محافظة صلاح الدين. تم فحص هذه الأسماك بحثاً عن المخرمات ذات المنشأ الاحادي ضمن عائلة Diplozoidae . سجلت الطفيليات الآتية مع النسب المئوية لاصابة الأسماك بها وهي: المخرّم *Diplozoon barbi* من غلاصم أسماك البني كبير الفم *Cyprinion macrostomum* (4.2%) والكارب الإعتيادي *Cyprinus carpio* (18.2%) و المخرّم *Diplozoon paradoxum* من أسماك البني الكبير الفم (2.1%) والمخرّم *Paradiplozoon bliccae* من أسماك البنيني الكبير الفم (13.7%) والكارب الاعتيادي (18.2%) والمخرّم *Paradiplozoon pavlovskii* من أسماك البلعوط الملوكي *Chondrostoma regium* (25%) والبنيني الكبير الفم (12.6%) والكارب الإعتيادي (9.1%). كانت أسماك أبو براطم *Barbus barbulus* والتيلة المرقطة *Capoeta trutta* خالية من الإصابات الطفيلية. تم في الدراسة الحالية تسجيل المخرّم *Paradiplozoon bliccae* لأول مرة من أسماك العراق. وقد تم إعطاء الوصف الكامل مع قياسات هذا الطفيلي. كما تم تسجيل إثنين من الأسماك كمضيفات جديدة لإثنين من الطفيليات في العراق.

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