

Procamallanus siluri (Nematoda: Procamallanidae): First record in Iraq from *Silurus glanis* from Greater Zab River, Kurdistan Region

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Abstract

KeyWords:

First record , Iraq
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Procamallanus siluri Osmanov, 1964 was detected in the intestine of *Silurus glanis* from Greater Zab river at Gwer district near Erbil city, Kurdistan region, north of Iraq, during the period from January to the end of September 2011, with a prevalence of infection 41.7%. This constitutes the first record of this nematode in Iraq.

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أول ظهور للدودة الخيطية *Procamallanus siluri* في العراق من أسماك الجري الأوربي *Silurus glanis* من نهر الزاب الكبير، إقليم كردستان

سمير جودت بلال وشمال محمد امين عبدالله
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الخلاصة

تم عزل الدودة الخيطية *Procamallanus siluri* Osmanov, 1964 من أمعاء سمكة الجري الأوربي *Silurus glanis* من نهر الزاب الكبير المار في قضاء كوير قرب مدينة أربيل في إقليم كردستان، شمال العراق، خلال الفترة المحصورة من كانون الثاني إلى نهاية أيلول 2011، وبنسبة إصابة 41.7%. يعد تسجيل هذه الدودة الأول في العراق.

الكلمات الدالة :

دودة خيطية ، نهر الزاب
الكبير ، العراق

للمراسلة :

سمير جودت بلال

قسم علوم الحياة، كلية
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البحث مستل من أطروحة الدكتوراه للباحث الاول

Introduction

Nematodes of the genus *Procamallanus* Baylis, 1923 (Order Spirurida; Family Camallanidae) are cosmopolitan in distribution as intestinal parasites of freshwater fishes and occasionally of amphibians (Hoffman, 1998). Approximately 34 species were reported from different species of fishes in the world (Yamaguti, 1961), 24 species have been recorded from South and Central America (Moravec, 1998) and nine species have been recorded from Bangladesh (Arthur and Ahmed, 2002). Among procamallanid nematodes reported from Iraq, only *P. viviparus* Ali, 1956 has been recorded in three species of freshwater fishes across Iraq (Mhaisen, 2012).

The present study was planned for investigation of the occurrence and description of *P. siluri* which parasitizes *S. glanis* in the Greater Zab River.

Material and Methods

Thirty- six fresh specimens of *Silurus glanis* were collected from Greater Zab river (tributaries of the Tigris River) at Gwer district near Erbil city, Kurdistan region, north of Iraq, during the period from January to the end of September 2011. The fish specimens were collected by gill netting, cast netting and electro fishing by local commercial fishermen. In the laboratory, fishes were measured and examined for nematodes. The fishes were opened from the abdominal side and each organ was separated and examined carefully under a dissecting microscope (Amlacher, 1970). Nematodes were fixed in 4% hot formalin and preserved in 70% alcohol, then cleared in glycerine solution or lactophenol and mounted in jelly glycerine (Chai *et al.*, 1986). Photos were taken with Olympus camera (Japanese origin), and the figures were drawn by using a camera lucida (drawing tube). Fish names follow FishBase (Froese and Pauly, 2011).

Results and Discussion

Silurus glanis were surveyed for parasitic nematodes during the period of the present study. The survey showed the occurrence of one nematode belonging to the genus *Procamallanus*. The following is a brief account on this parasite.

Procamallanus siluri Osmanov, 1964

Host: *Silurus glanis* Linnaeus, 1758.

Prevalence of infection: 41.7 %.

Mean intensity: 1.7 worm/ fish.

Site infection: Intestine.

Locality: Greater Zab river at Gwer District.

Description: Medium sized worms, cuticle thick, with dense transverse striations, body of live specimen reddish. Mouth opening spherical, provided with four

mouth papillae and two lateral amphids. Buccal capsule continuous, thick walled, orange in color. Base of buccal capsule strengthened, forming a kind of ring containing several thickened elements. Surface of anterior end of capsule provided with six transverse, sclerotized projections surrounding mouth aperture. Inner surface of buccal capsule smooth in male and provided with several interrupted spiral ribs in female. Muscular esophagus slightly shorter than glandular esophagus. Small conical deirids situated slightly in front of nerve ring level, excretory pore located at short distance below nerve ring (Moravec and Amin, 1978).

Female: Body length 6.23-11.27 mm, width 0.129-0.243 mm. Length of buccal capsule 0.083-0.0109 mm, width 0.091-0.121 mm, inner surface of capsule always provided with fine short spiral ribs, these being less numerous in younger females. Length of muscular esophagus 0.451-0.549 mm, glandular esophagus 0.629-0.872 mm. Nerve ring 0.201-0.251 mm, excretory pore 0.371-0.493 mm, deirids 0.204-0.241 mm from anterior extremity (Fig. 1A; 2A).

Vulva postequatorial, 3.31-4.37 mm from posterior extremity. Uterus of gravid females (8.13-11.27 mm long) containing numerous first stage larvae, uterus anteriorly reaching near end of muscular esophagus, at a distance of 0.213-0.461 mm from it, posteriorly reaching almost to rectum, 0.184-0.217 mm from it. Uterus of pregravid females (less than 8 mm long) containing only slightly oval shaped eggs, 0.035-0.042 mm in diameter (Fig. 1I; 2H).

Tail relatively short, 0.082-0.128 mm long, its tip always rounded without any process (Fig. 1D; 2D).

Male: Body length 3.87-4.12 mm, width 0.11-0.17 mm. Buccal capsule smooth without spiral ribs, 0.072-0.083 mm long x 0.061-0.072 mm wide. Length of muscular esophagus 0.035-0.040 mm, glandular esophagus 0.463-0.658 mm (Fig. 1B; 2B). Deiridis 0.157-0.182 mm, nerve ring at about 0.184-0.241 mm from the anterior extremity, excretory pore 0.287-0.390 mm from anterior extremity.

Posterior end of body bent ventrally, provided with rather wide lateral alae. Six to seven big pedunculate preanal papillae present. Six pairs post anal papillae, three first pairs close together as well as some what fourth and fifth pairs; fourth and sixth pairs seem to be lateral, and the remaining pairs are subventral. In addition to these, two pairs of small papillae surround cloaca (one pair preanal and one pair postanal). Right spicule well sclerotized, 0.152-0.167 mm long. Left spicule slightly sclerotized, length 0.080-0.094 mm. Gubernaculum heavily sclerotized, wedge shaped in lateral view, 0.032-0.037 mm long, orange in color and

appears to be bipartite in ventral view. Tail rather short, rounded tip, 0.059-0.063 mm in length (Fig. 1E; 2E).

Fourth-stage larvae: Length of body 2.31-2.44 mm, width 0.071-0.079 mm. Buccal capsule distinctly longer than wide (in male and female larvae), orange in color, provided with six transverse, sclerotized projections on anterior rim. Male buccal capsule smooth, without spiral ribs, larvae, 0.046-0.048 mm length, 0.031-0.034 mm width, inner surface of buccal capsule of female larvae provided with several spiral ribs, 0.058-0.061 mm length, 0.043-0.046 mm width (Fig. 1C; 22C). Capsule opening into esophagus through feebly sclerotized esophageal funnel. Length of muscular esophagus 0.270-0.0288 mm, glandular esophagus 0.314-0.364 mm. Nerve ring at 0.136-0.152 mm from anterior extremity (Fig. 1F; 2F), excretory pore 0.244-0.246 mm, deirids 0.127-0.131 mm from anterior extremity.

Tail conical, 0.061-0.066 mm long, its tip provided with three small processes. Dorsal process fairly big, 0.005-0.006 mm, and two subventral processes considerably smaller, 0.003-0.0032 mm (Fig. 1G, H; 2G).

The description and measurements of the present specimen are similar to those reported by Moravec and Amin (1978) for *P. siluri* detected from stomach and intestine of *Silurus glanis* and *Neomacheilus longicauda* from Kunduz and Khanabad rivers in north-eastern Afghanistan. Since no previous report about recording of this species is available in Iraq, the present record represents the first record of *P. siluri* in our country. Previously, only one species of the genus *Procamallanus* has been recorded in Iraq, which is *P. viviparus* in the stomach of *Mystus halepensis* from Tigris river, Baghdad city (Ali *et al.*, 1987). Also, it was later recorded from *Mastacembelus mastacembelus* from Greater Zab river in Kurdistan region (Bashė and Abdullah, 2010) and from *Silurus triostegus* from Greater Zab river also (Shwani and Abdullah 2010).

By comparing both species which recorded in Iraq, it appears that *P. viviparus* differs from *P. siluri* in many characters and measurements, but the most important feature in the difference in structure of the mouth and buccal capsule, as the mouth of *P. viviparus* in both males and females is supplied with eight rows of teeth, each row with 7-8 teeth. Both males and females of *P. viviparus* are smaller in size in comparison with *P. siluri*. Males of *P. viviparus* vary in length from 3-3.5 mm and from 0.09- 0.12 mm in diameter. The female measures 5-7 mm in length and 0.1-0.2 mm in diameter. In the present specimens, there are six spiral transverse striations of

teeth in females only and males have a smooth buccal capsule without any teeth. The most clear and important character is the posterior end as in *P. viviparus* there is no any differences between the end of the fourth larval stage and adults, but in *P. siluri*, the caudal end of both male and female fourth larval stages are supplied with three small processes which are not present in adults (Bykhovskaya-Pavlovskaya *et al.*, 1962; Moravec and Amin, 1978).

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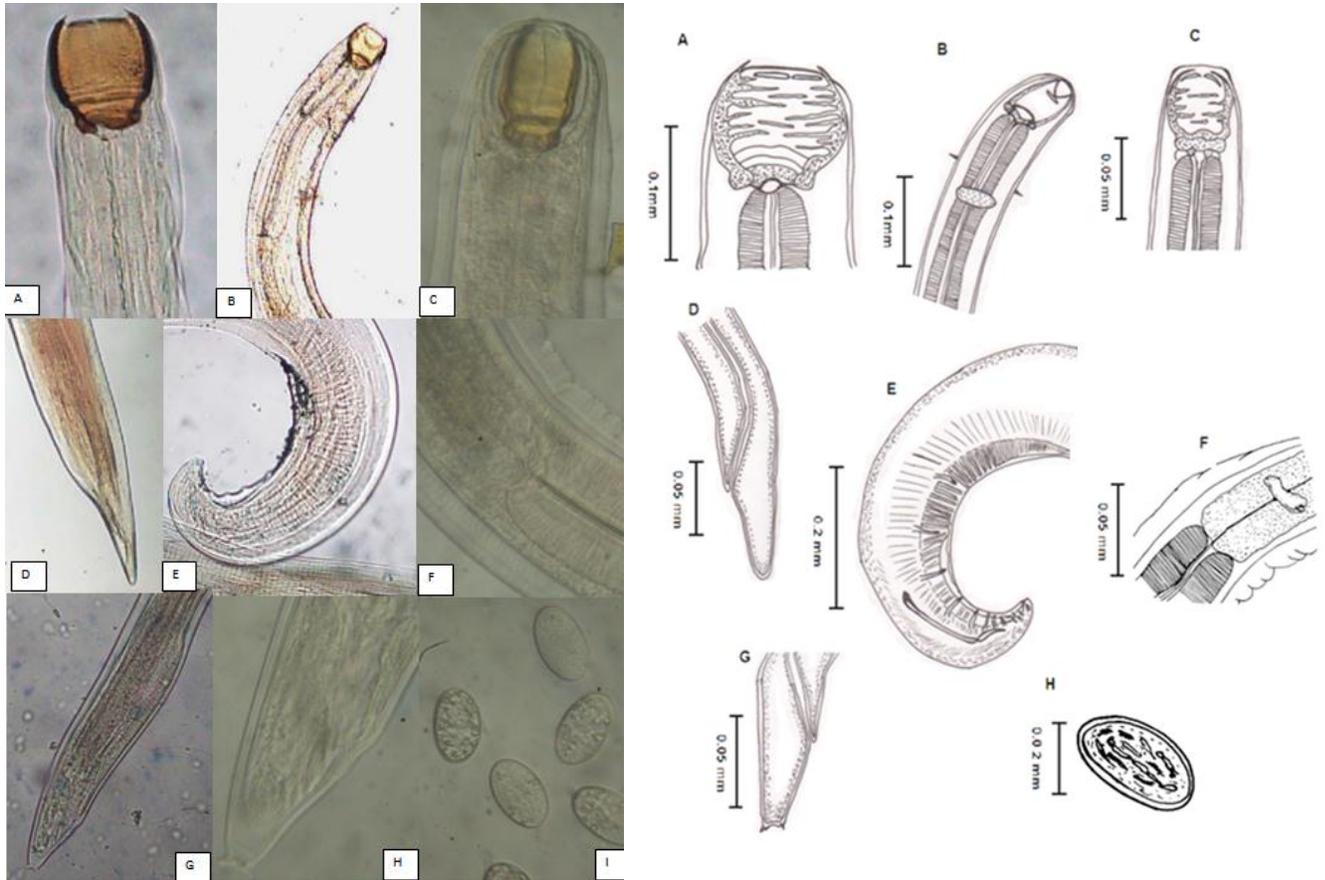


Fig (1): Photomicrographs of *Procamallanus siluri*.

- A- Anterior end of adult female (400X).
- B- Anterior end of adult male (200X).
- C- Anterior end of female 4th larval stage (400X).
- D- Posterior end of adult female (400X).
- E- Posterior end of adult male (400X).
- F- Nerve ring of female 4th larval stage (400X).
- G- Posterior end of 4th larval female stage (200X).
- H- Posterior end of 4th larval female stage 400X.
- I- Eggs (400X).