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Azhar A. Al-Moussawi
Iraq Natural History Museum,
University of Baghdad, Bab Al-
Muadham, Baghdad, Iraq

Incidence of *Telorchis assula* (Dujardin, 1845) (Digenea: Telorchidae) in two Colubrid snakes in Baghdad city, Central Iraq

Azhar A. Al-Moussawi

Abstract

The grass snake, *Natrix natrix* and the dice snake, *Natrix tessellata* are present throughout Iraq. They act as definitive hosts for the trematode *Telorchis assula*. Thirteen out of 18 snakes (72.22%) were found infected with 20 specimens of *T. assula*. The description and the meristic characters of the trematode were provided. The total infection rate in the two *Natrix* spp. was compared with those of the same snakes in two adjacent countries. The different infection rates for males and females of the two snakes also were given with discussing the role of diets and the probable intermediate hosts of the trematode in their infection. *T. assula* is recorded here for the first time from the two Colubrid snakes, *N. natrix* and *N. tessellata* for Iraq.

Keywords: *Telorchis assula*, Colubrid snakes, *Natrix natrix*, *Natrix tessellata*, Baghdad, Iraq.

1. Introduction

The grass snake, *Natrix natrix*, occurs from Europe and northwestern Africa east to Middle Asia [1]. The geographical distribution for the dice snake, *Natrix tessellata* extends from Middle and Southern Europe to Western China [2]. The two snakes often inhabiting similar areas in Eurasian habitats [3]. They both present throughout Iraq, *N. natrix* in Tigris River and *N. tessellata* in Euphrates River [4, 5, 6, 7].

Members of *Telorchis* are intestinal parasites of freshwater turtles, snakes, and salamanders worldwide, snakes act as their definitive hosts [8, 9, 10]. *T. assula* was isolated previously from *Natrix natrix*, *N. tessellata*, *Vipera berus*, *V. ursine* and *Pseudopus apodus* in many countries in Asia, Europe and North America [1, 10, 11, 12, 13, 14, 15, 16, 17, 18].

In Iraq, studies on parasitic helminthes of reptiles are rare. Two trematodes of the genus *Telorchis* were isolated from two turtles, *T. cyclemmidis* from *Clemmys caspica* [19] and *T. stunkardi* from *Mauremys c. caspica* [20]. From *N. tessellata*, three cestodes were reported: *Ophiotaenia europaea* by [21]; *Oochoristica* sp. and *Crepidobothrium* sp. by [19]. Al-Moussawi [22, 23] isolated the nematode *Tanqua anomala* from *N. tessellata* and the cestode *O. europaea* from *N. natrix* and *N. tessellata* respectively.

Little is known about the parasitic fauna of *N. natrix* and *N. tessellata* in Iraq. The present study aims to throw the light on the incidence and the infection rates of these two snakes with the trematode *T. assula* in Baghdad, central Iraq.

2. Materials and methods

Eighteen Colubrid snakes (eight *N. natrix* and ten *N. tessellata*) were collected from Baghdad city during April to November, 2014. Their alimentary canals were removed and dissected, put in normal physiological saline. The recovered trematodes were fixed and stored in 70% alcohol, stained with acetocarmine, dehydrated in graduated concentrations of ethyl alcohol, immersed in Canada balsam on slides for examination.

The Isolated trematodes were identified according to [12, 13, 16]. All measurements were calculated by using ocular and stage micrometers and given in millimeters as means followed by the range in parentheses. Photomicrographs were taken with a digital camera Infinity lite-K100 attached to compound microscope Micros MCX100.

3. Results and discussion

3.1 *Telorchis assula* (Dujardin, 1845) (Fig. 1A; B)

Synonyms: *Certorchis ercolanii* Monticelli, 1893; *Distoma assula* Dujardin, 1845; *Distomum signatum* Ercolani, 1881, nec Dujardin, 1845; *Distoma monticelli* of Risso, 1902;

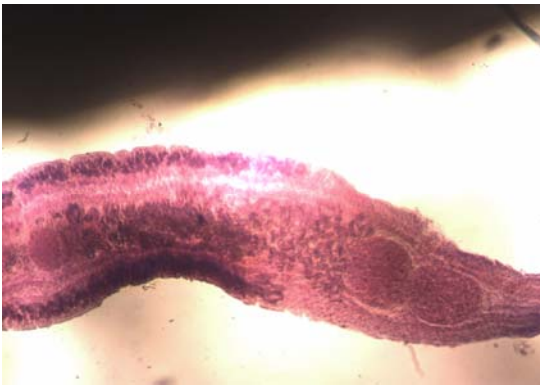
Correspondence:

Azhar A. Al-Moussawi
Iraq Natural History Museum,
University of Baghdad, Bab Al-
Muadham, Baghdad, Iraq

Telorchis ercolanii (Monticelli, 1893) Braun, 1901 per Dollfus, 1957; *Telorchis nematoides* Muhling, 1898 [13, 16, 24].



A: Anterior end.



B: Ovary, uterus, vitellarian follicles and testes.

Fig 1: Photomicrographs of *Telorchis assula* (Dujardin, 1845)

3.2 Description: Body slender, spatulate, with fine spines on the cuticle, 4.22 (4.1– 5.0) long, 0.52(0.42–0.54) wide. Oral sucker subterminal, 0.12 (0.10 -0.13) in diameter. Ventral sucker smaller than oral sucker, 0.10 (0.10-0.11) in diameter. Pharynx spherical and small, .065 (0.063 – 0.075) in diameter. Oesophagus moderately long, bifurcate in the middle distance between the two suckers. Caeca slender extends to near the posterior extremity of body. Genital pore median slightly in front of ventral sucker. Vitellria lateral in the uterine zone end at a short distance of the anterior testis. Testes postacetabular, rounded, one behind the other, locate near posterior extremity of the body, anterior testis is 0.22 (0.20-0.23) long, 0.16 (0.14-0.16) wide, posterior testis is 0.26(0.24-0.28) long, 0.16 (0.14-0.17) wide. Cirrus sac posterior to ventral sucker, long and slightly coiled, extend closely to ovary. Ovary far in front of the testes, posterior to acetabulum, near the base of cirrus pouch, nearly round, 0.11(0.09-0.12) long, 0.12(0.10-0.13) wide. Uterus with ascending and descending branches, between ovary and anterior testis. Eggs small, 0.027 (0.016-0.029) long, 0.016 (0. 015 -0.016) wide. Excretory vesicle Y-shaped.

The diet of *N. natrix* consists mainly of fishes, lizards and amphibians [25, 26] and of *N. tessellata* consists of snails, insects, fishes, lizards, amphibians and mammals [26, 28]. It is worthy of mention here that the remaining contents of the food in the stomach of *N. natrix* that found in the present study were: amphibians, tadpoles and fishes, and those of *N. tessellata* were: snails, insects, amphibians, tadpoles and cyprinid fishes. The adult and larval amphibians and snails are the most common second intermediate hosts for some

Telorchis spp [9]. So they are responsible for the infection of *N. natrix* and *N. tessellata* with *T.assula* in the present study. The infection rate in *N. tessellata* was found higher than it in *N. natrix*, which may be due to the presence of snails that represent another intermediate host for *T.assula* in the diet of *N. tessellata* in addition to amphibia.

Thirteen out of 18 Colubrid snakes (72.22%), eight of *N. natrix* (three males and five females) and 10 of *N. tessellata* (four males and six females), were found infected with 20 specimens of *T. assula*. Only five (62.5%) of *N. natrix* were found infected with different infection rates for sexes, i.e.33.33 percent for males and 80 percent for females. While eight (two males and six females) of 10 *N. tessellata* (80%) were found to harbor *T. assula* with 50 percent infection rate for males and 100 percent for females.

In the present study the infection rate found higher in *N. tessellata* than in *N.natrix*. This agree with other findings in previous studies. Yildirimhan *et al.* [1] found *N. tessellata* and *N.natrix* in Turkey infected with *T.assula* with infection rates 71 % and 52% respectively. Yossefi *et al.* [17] found the infection rates were 88.88% for *N. tessellata* and 77.77% for *N.natrix* in Iran.

4. Conclusion

To the best of our knowledge, there are no previous reports for *T.assula* incidence in Iraqi reptiles, so recording *T. assula* from *N. natrix* and *N. tessellata* in the present study presented an addition to Iraqi reptilian helminthes. Further studies are suggested to acquire information regarding parasites of other reptiles in Iraq.

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