

***Natrix tessellata* snake as a definitive host for the cestode *Spirometra* sp.**

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Abstract

Life cycle of the cestode *Spirometra* spp. required a fresh water *Cyclops* spp. as the first intermediate host and to amphibians, reptiles, birds or mammals as the second intermediate and paratenic hosts. While carnivores mammals serve as the definitive hosts. In this case report and for the first time in the River Nile State of Sudan, the snake *Natrix tessellata* was found to be the definitive host for *Spirometra* sp.

Keywords: *Spirometra* sp., *Natrix tessellata*, Sudan.

Introduction

Spirometra is a genus of pseudophyllidean cestode, parasitizes the small intestine of carnivores such as canines and felines as definitive hosts. When adult *Spirometra* spp. pass their eggs into aquatic fresh water environments with the feces of the definitive host, the eggs hatch into larva called coracidia, which are eaten by crustacean, generally copepod as the first intermediate host. Coracidia penetrates into haemocoel of the copepod where it develops into proceroid larva. When the copepods are eaten by the second intermediate hosts such as amphibians, reptiles, birds or mammals, the proceroids cross their intestinal walls and migrate to muscles to develop into plerocercoids larva. Finally, when plerocercoids larva consumed by the definitive hosts, they develop into adult helminthes in their intestines ^[1-4]. A human can be accidentally infected with this

parasite and may serve as a second intermediate host or a definitive host ^[5,6].

Case report

On Thursday, 26 July 2018 at 6:32 pm, a snake was observed near a home door at the Southern Campus of Shendi University, Shendi (16°40'N, 33°25'E), Sudan. Quickly using a wooden stick, the snake was hit on the back to be immobilized, then taken to the Zoology Laboratory, Faculty of Science and Technology and euthanized using chloroform. Thereafter, weighed, measured and identified. At necropsy, the internal organs: lungs, heart, liver, urinary bladder, esophagus, stomach, small intestine and large intestine were removed, opened and placed in a normal saline solution (0.9%) in separate Petri-dishes, and examined thoroughly under a stereo microscope for parasites infections.

The snake collected was identified as dice snake, *Natrix tessellata* (Fig. 1), with 6 g

total weight and 32 cm total length (snout-vent length and tail length). While a total of 7 not segmented, pyriform, semi-rounded front end larva were collected from the small intestine of the snake (Fig. 2). Based on the

available literature, the larva collected was identified as an immature *Spirometra* sp. cestode.



Figure 1. *Natrix tessellate* snake

Discussion

Spirometra spp. has a complex life cycle consisting of first, second intermediate and definitive hosts [1]. Humans can become infected if they accidentally eat frog flesh or fish with the plerocercoid encysted in the muscle. Human infection with *Spirometra* is termed sparganosis, which has been reported worldwide [7-9].

N. tessellate is a semi-aquatic snake with a cosmopolitan distribution [10,11]; documented to be infected with various parasitic helminthes [12,13]. In this report, it was found that *N. tessellate* serves as a definitive host for *Spirometra* sp. cestode; this can be explained that this snake is most likely fed on second intermediate aquatic animals such as frogs, fish or even snakes. As usual, snakes serve as a second intermediate host for *Spirometra* spp. and rarely as a definitive host. It is worth mentioning that the location

of a collection of this snake is about five kilometers far from the main course of the River Nile, which is a suitable habitat for *N. tessellate* snake. Moreover, this snake has been observed in locations a little bit far from the River Nile banks during the flood seasons.

In conclusion, this is the first report on *Spirometra* sp. infecting the intestine of *N. tessellate* snake from River Nile State, Sudan. Therefore, further investigations are required on the parasite community of this snake.



Figure 2. Immature *Spirometra* sp. (x10) collected from intestine of *Natrix tessellate* snake

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