Sparganosis in Russell's viper snake: a case report

K. T. Kavitha · B. R. Latha · S. T. Bino Sundar ·
R. Sridhar · S. Abdul Basith

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Abstract The occurrence of the plerocercoid larva, *Sparganum* of *Sparganum* spp. in two Russell's viper snakes maintained in Chennai snake park trust, Chennai is reported for the first time from Southern India. The cestode larvae were found in the sub cutis and were flat, solid, wrinkled, ribbon like creamy white in colour with pseudosegmentation with anterior end possessing bothria. The cuticles, subcuticular cells and parenchymatous tissue stained by acetic alum carmine further confirmed the cestode larvae.

Keywords *Spirometra* spp. · Sparganosis · Cestode larvae

Introduction

Sparganosis is a disease of snakes, reptiles and mammals like swine and man. It is caused by migration of second larval stage (*Sparganum*) of the pseudophyllidean cestode of the genera *Spirometra* sp. Snakes get infected by ingesting infected copepods (first intermediate host) found in water. Sparganosis has been reported from China, Korea, Japan and South East Asia. Adult tapeworms are seen in the intestine of domestic and wild canids and felids. The importance of snakes as main source of human sparganosis in Korea was due to consumption of snakes (Kobayashi

1925; Seo et al. 1964). Cho et al. (1973) has surveyed the distribution and habitat of *Sparganum mansoni* in some terrestrial snakes in Korea and reported that all kinds of snakes were found to be infected with larvae of *S.mansoni*. Majority of the *Sparganum* were located in the subcutaneous tissues (59 %) followed by coelomic cavity (26 %) and muscular tissue (19 %). A maximum of 25 larvae per snake has been reported. The present paper deals with the first report on the occurrence of *Sparganum* Russell's viper snake in Southern India.

Case report

Two dead Russell's Viper snakes received from Chennai Snake Park Trust, Guindy, Chennai were necropsied at the Department of Veterinary Pathology, Madras Veterinary College. Upon incision of the skin large number of creamy white worms was observed in the sub cutis. These worms were transported in normal saline to Department of Veterinary Parasitology for further identification (Fig. 1).

Fig. 1 *Sparganum* larva in the subcutaneous tissue of snake

K. T. Kavitha (✉) · B. R. Latha · S. T. Bino Sundar ·
R. Sridhar · S. Abdul Basith
Department of Veterinary Parasitology, Madras Veterinary
College, Chennai 600007, India
e-mail: kavitharavi2004@yahoo.com

R. Sridhar
Department of Veterinary Pathology, Madras Veterinary
College, Chennai 600007, India

Fig. 2 *Sparganum* larva collected from the snake of sub cutis

Gross description of the worms:

On gross examination, the worms (50 Nos.) were found to be flat, solid and creamy white in colour with pseudosegmentation. They were wrinkled and ribbon like. The average length was 10–12 cm and width was 0.5–0.8 cm. The anterior end was broader than the rest of the body and had two longitudinal grooves (bothria) (Fig. 2). They were further processed by standard parasitological techniques and stained by acetic alum carmine.

Microscopic description of the worms

The body of the worms showed a typical cestode cuticle, subcuticular cells and parenchymatous tissue which was filled with longitudinal muscle bundles scattered at random or a stromal network of smooth muscle. Based on the gross and microscopic observations and the description given by Chandler (1955), the worms were identified as plerocercoid larvae (*Sparganum*) of *Spirometra* spp.

Discussion

Cats, dogs and raccoons are the definitive host for *Spirometra* spp. The life cycle involves two intermediate hosts, the first one being a fresh water crustacean like Cyclops and paratenic hosts which include vertebrates like snake, frog, hedge hog, fowl, pig and man act as second intermediate hosts. Eggs are passed continuously in the faeces and a coracidium hatches out and is swallowed by the first intermediate host cyclops. Infected cyclops are eaten by second intermediate hosts like snakes, amphibians, alligators, birds and mammals including man and plerocercoids or spargana develop in these hosts. The spargana are white, ribbon like structures which may reach several cm in length

(Soulsby 1982). The life cycle is completed when cats or dogs ingest the infected second intermediate host. The *Sparganum* may be seen in encapsulated or degenerative and causes various degree of fibrous proliferation with peculiar cellular infiltration in snakes.

Transmission to human beings occurs through intact mucous membranes during ingestion/handling of frogs, snakes and pork and by ingestion of contaminated water (Acha and Zyfres 1987). It can also occur due to contact between a second intermediate host and an open wound or mucus membrane, seen especially in Vietnam and Thailand, where snakes and frogs are popularly believed to have an antiphlogistic effect and are applied over the wound as poultices (Kim et al. 1984).

In the present report, the possible source of spargana in the Russell's viper snake could be attributed to ingestion of drinking water with infected Cyclops Snakes in captivity can be protected from sparganosis, in major instances, by providing clean drinking water.

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