CASE REPORT

DIPLOSCAPTER CORONATA INFECTION IN THAILAND: REPORT OF THE FIRST CASE

Dorn Watthanakulpanich, Malinee T Anantaphruti and Wanna Maipanich

Department of Helminthology, Faculty of Tropical Medicine, Bangkok, Thailand

Abstract. A 73-year-old Thai woman living in Mueang District, Saraburi Province, central Thailand presented with numerous hookworm-like nematodes, finally revealed as Diploscapter coronata, by fecal culture. The patient exhibited no significant clinical signs of the gastrointestinal or genitourinary systems, and was generally not ill as a result of this unusual infection. Less commonly, patients have presented with symptoms and signs of Diploscapter coronata infection. However, potentially serious consequences can occur where people have exposure to an environment that has been contaminated with infected feces, or more specifically, infective eggs; such conditions could lead to human infection with Diploscapter coronata worms. This was the first reported occurrence of human Diploscapter coronata infection in Thailand.

INTRODUCTION

This small nematode was first described by Cobb (1893) under the name Rhabditis coronata, from a single female specimen found in a human around the roots of a banana plant on Fiji Island. De Man (1895) found only numerous single male worms in the diseased pseudo-bulbs of tropical orchids. Zimmerman (1898) and Maupas (1900) added more information about the morphology of the worm, then Cobb (1913) reviewed and established a new genus: Diploscapter. Peters (1930) also found it in sewage beds in England and supported Cobb’s work. The parasite was then known as Diploscapter coronata, which was originally not infectious, but merely a saprophyte living in soil around ruined plants and roots. Its life cycle was later discovered to be as follows: adult worms generally inhabit the stomach wall of cats, dogs and tigers, and are infrequently found as human parasites; the mature female worms produce fertilized ova that are excreted with the host’s feces; eggs are flushed by rain into ponds, canals and rivers, where they hatch into first-stage larvae; the infective larvae are then ingested. After the life cycle was established, only a few case reports appeared in the literature over subsequent decades because human infection was not common.

In Japan, these worms were found in the urinary sediment of an old female suffering from acute pyelonephritis (Yokogawa, 1936). Most of the clinical manifestations of human Diploscapter infection are not yet known due to limited information; thus, there is a need for more studies. Moreover, there was no information on Diploscapter infection in Thailand until now.

CASE REPORT

A 73-year-old single Thai female from Mueang district, Saraburi Province, central Thailand had a health check-up with the parasite control program of the Faculty of Tropical Medicine, Mahidol University. She used to move around and live in Ko Samui district and Phunphin district, Surat Thani Province, for 6 and 2 months, respectively, in early 1994. She had a habit of consuming a local Thai dish called “Laab Moo,” and sometimes excreted feces in the jungle. Microscopic examination of the feces demonstrated hookworm-like eggs which were oval in outline, possessed one thin single shell with one yolk cell inside, and measured about 48-50 μ by 21 μ. The feces sample was cultured for 3 days. Thereafter, numerous, active, small hookworm-like nematodes of various sizes were found (Fig 1). The worms closely resembled parasites described by Peters (1930) and Yokogawa (1936). After careful examination, they were finally identified as D. coronata.

Once informed consent was obtained, the patient was further studied. Physical examination revealed no fever and no obvious clinical features. She had a past history of dyspepsia and constipation, good nutritional status, and normal pharynx and tonsils. No abnormal sounds of the heart or lungs, and no tenderness or masses of the abdomen were observed. There were no abnormal GI or genitourinary signs. Blood chemistry and urine analysis appeared normal. A gastric aspirate was taken and examined based on a previous study (Chandler, 1938). Follow-up was scheduled to assess response to therapy with albendazole 400 mg single dose. Fecal collection was performed once again for examination, for which the result was negative.
DISCUSSION

By the morphology and structure of the nematodes, all worms were identified as *D. coronata* using the following special characteristics: annulated cuticle with two pairs of lips in the mouth region; lips that had been entirely transformed into a pair of medial, outwardly acting, distally bifurcate fossores and a pair of lateral lamellae; rhabditoidal type of oral cavity; absence of glottoid apparatus, and bursa with 7 pairs of papillae (Fig 2) (Chitwood and Chitwood, 1950; Bird, 1971; Skryabin, 1992). In our specimen, both sexes were found and female nematodes could lay eggs that hatched into the larval stage (Fig 3). Maupas (1900) found about 5 or 6 males per 1,000 worms and the females themselves could develop to maturity. Females contained spermatozoa in uteri in cultures with no males. The worms were described as autogamous protandrous hermaphrodites and males were considered non-functional. This was different from other studies, which stated that mature nematodes were all female (Yokogawa, 1936; Chandler, 1938) and that males were never found in the soil of any suspicious sites of human infection.

In our patient case, female nematodes were only found in rotten tissues of a banana tree near her house, where she used to play with her grandchildren. While the worms are saprophytic, thriving in decaying matter such as diseased roots of various plants in tropical and subtropical lands, they can also live in soiled parts of the human body, such as the opening of the female urogenital tract; from this site, they may produce potentially life-threatening urinary tract infection. The same nematodes were not found in the soil near our patient’s plants, as in previous studies.

The human stomach is usually free from worms due to its acidity. However, *D. coronata* is occasionally recovered from this organ in people whose gastric hydrochloric acid level is abnormally low (Chandler, 1938). Gastric aspiration was performed in our patient.
but neither worms nor eggs were found, which may have been due to the concentrated acidity of the stomach (pH 5.0 and bicarbonate 0 mmol/l). Contamination of free-living parasites during fecal collection, by soil, implements or flies, could not be ruled out and should be kept in mind, although fecal collection was explained to our patient and strict precautions to prevent contamination were taken (Sandground, 1925).

ACKNOWLEDGEMENTS

The authors would like to thank the patient who allowed us to take her history and clinical information; Dr Noriaki Tomono for information of *D. coronata* in Japan; and Mr Gasama Grathaithong for communication with the patient.

REFERENCES


Chandler AC. *Diploscapter coronata* as a facultative parasite of man, with a general review of vertebrate parasitism by rhabditoid worms. *Parasitology* 1938;30:44-55.


Cobb NA. New nematode genera found inhabiting fresh water and non-brackish soils. *J Wash Acad Sci* 1913;3:432-44.


Peters BG. Some nematodes met within a biological investigation of sewage. *J Helminthol* 1930;8:165-84.


