A RARE CASE OF DIPHYLLOBOTHRIASIS FROM PONDICHERRY, SOUTH INDIA

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Abstract

Diphyllobothriasis is an intestinal parasitic infection caused by the ingestion of raw fresh-water fish containing the infectious larvae of *Diphyllobothrium* spp. This infection is uncommon in India. We report a case of diphyllobothriasis that occurred in Pondicherry, India, in a 5-year-old boy hailing from a fishing community. He attended the Pediatric OPD with spontaneous discharge of segments of the adult parasite. The segments (macroscopically and microscopically) were identified as those of *Diphyllobothrium latum*. The stool examination also revealed characteristic oval eggs.

Key words: Child, *D. latum*, Diphyllobothriasis

Diphyllobothriasis is an intestinal parasitic infection caused by the ingestion of raw or partially cooked fish containing the larvae of *Diphyllobothrium* spp. Four recognized species are known to infect humans - *Diphyllobothrium latum*, *D. pacificum*, *D. klebnoviskii* and *D. nihonkaiense*. *Diphyllobothrium latum* is most commonly associated with human infections. Many species are also known to infect fish-eating birds, dogs, foxes and bears. Human diphyllobothriasis has been reported from Europe, Korea, Japan, Malaysia, Peru, Chile, Argentina, Brazil, etc. The first case of diphyllobothriasis from India was reported in 1998 from Vellore, South India.

Case Report

A 5-year-old boy reported to the pediatric clinic of Pondicherry Institute of Medical Sciences, Pondicherry, in November 2005 with a history of spontaneous discharge of light-colored segments in stool. He also gave history of similar episodes over the last one year. Every episode of passage of segments was accompanied by abdominal pain. There was no history of diarrhoea, vomiting or pica. He was a non-vegetarian with unremarkable dietary habits. He belonged to a fishing community; therefore, handling of raw fish was an obvious risk factor. His hematological examination revealed hemoglobin of 10.4 gm/dL, PCV - 32.0%, RBC count - 4.47/cu. mm, MCV - 72 fl, MCH - 23.2 pg. Total leukocyte count was 8,200/cu. mm and total eosinophil count was 16%. Peripheral blood smear examination revealed microcytic hypochromic anemia with moderate eosinophilia.

The piece of worm passed by the boy was creamy white in color and measuring 5 cm in length and 1.5 cm in breadth (Fig. 1). Each segment was broader (15 mm) than longer (3 mm). There was no identifiable scolex. Histopathological examination of the adult worm revealed gravid segments filled with characteristic oval operculated eggs (Fig. 2). Stool examination by formol ether sedimentation technique revealed characteristic oval eggs measuring 70 × 45 µm. The egg was operculated with a knob on the opposite side (Fig. 3). Based on the macroscopic and microscopic features of the segments and the morphological characteristics of the egg, *Diphyllobothrium latum* was identified. The patient was treated with praziquantel 400 mg single dose.

Discussion

The life cycle of *D. latum* is complex, with two intermediate hosts. The plerocercoid larvae, the infective form for humans, dogs and other fish-eating animals, are present in the second intermediate host. This plerocercoid larvae of *Diphyllobothrium* spp. have been demonstrated in domestic salmon, cherry salmon, red-lip mullet, pike, perch, rainbow trout, lake trout, burbot, etc. Reports of diphyllobothriasis...
after the ingestion of food with raw domestic salmon; red-lip mullet; shushimi, a Japanese raw fish; and sushi have been documented.

Diphyllobothriasis is not associated with specific symptoms. General complaints of nausea, diarrhea, abdominal pain or discomfort may be reported by some patients. Most infections manifest with eosinophilia. Prolonged or heavy \textit{D. latum} infections may cause megaloblastic anemia due to parasite-mediated dissociation of vitamin B\textsubscript{12} intrinsic factor complex within the gut lumen, making B\textsubscript{12} unavailable to the host.\textsuperscript{9} The present case had only non-specific symptoms. Eosinophilia was marked with a differential count of 16\%. Peripheral blood smear examination of the patient did not reveal megaloblastic anemia, which is commonly associated with this infection. Case reports of non-specific symptoms without megaloblastic anemia have been documented.\textsuperscript{3-5} A survey conducted in Brazil\textsuperscript{7} in 2004 found that abdominal discomfort and intermittent diarrhea were the commonest symptoms, while some cases were asymptomatic. Parasite was eliminated in 22\% of these cases.

Diphyllobothriasis is diagnosed by examining gravid segments in addition to microscopic examination of stool for characteristic eggs. Macroscopically, the segment is broader than longer. Microscopic examination of the segment shows the uteri forming a rosette. The sagittal section of the adult worm in scanning electron microscope generally shows a cirrhus sac lying horizontally, with the seminal vesicle lying dorsocaudal to it.\textsuperscript{2} In this case, the segment did not show rosette-type uterine cavity. However, characteristic operculated eggs could be well defined in the cavity. The stool examination in diphyllobothriasis reveals operculated oval egg with a knob on the opposite side to the operculum. The eggs of \textit{D. pacificum} are thick shelled, operculated, measuring 40-60 µm in length and 36-40 µm in diameter; thus they are smaller than those of \textit{D. latum}, which is 58-76 µm in length and 40-50 µm in diameter.\textsuperscript{9} The egg present in the stool of this boy had similar features and measured 70 × 45 µm.

Scanty reports of diphyllobothriasis are available in literature from South India.\textsuperscript{8,10} Till date, there are no reports from the northern part of the country. This may be attributed to the fish-eating habit of the people in southern part of the country, which also has a large population of fishing community living in the coastal belt of the peninsular part of India. It is speculated that these infections may be misdiagnosed as taeniasis.

Diphyllobothriasis is associated with consumption of raw or marinated fish. The changing culinary habits have resulted in dishes like carpaccio, sushi and other raw fish recipes being served in the restaurants, especially in the European countries. This has led to an increasing incidence of diphyllobothriasis.\textsuperscript{1} In India, these recipes do not find favor with the general population. However, with introduction of multinational cuisine, there are increasing chances of acquiring this infection. Other tapeworm infections like taeniasis, hydatid disease and hymenolepsiasis are commonly found in India. It is therefore suggested that both macroscopic and microscopic examination of the segments should be done to differentiate the commonly encountered taenia infections and to detect diphyllobothriasis.

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References

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**Announcement**

**Dr. J. C. Patel Birth Centenary Celebration Committee**

The year 2008 is the Birth Centenary Year of Dr. J. C. Patel. Some of his students/admirers felt that it would be a good idea to celebrate this Centenary Year by organizing CMEs, Orations/Lectures, Conferences, etc. during the year. He was associated with many professional bodies, which meet regularly every year; during these annual meetings/ conferences, a lecture/symposium, etc can be organized as a part of Centenary celebrations. We would like to form a Dr. J. C. Patel Birth Centenary Celebrations Committee. All his past students/admirers are invited to join the committee (without any financial commitment). Kindly communicate your name, designation, postal address, telephone number and E-mail ID to Dr. B. C. Mehta at Flat 504, Prachi Society, Juhu-Versova Link Road, Andheri (W0, Mumbai 400 053 (drmehta.bc@gmail.com).

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