

SHORT COMMUNICATION

HUMAN DIPHYLLOBOOTHRIASIS: REPORTS FROM RIO DE JANEIRO, BRAZIL

LUIZ E.R. TAVARES¹; JOSÉ L. LUQUE²; TERESA C.B. DO BOMFIM²

ABSTRACT: TAVARES, L.E.R.; LUQUE, J.L.; BOMFIM, T.C.B. [Human diphyllbothriasis: reports from Rio de Janeiro, Brazil.] Difilobotríase humana: relatos no Rio de Janeiro, Brasil. *Revista Brasileira de Parasitologia Veterinária*, v. 14, n. 2, p. 85-87, 2005. Instituto de Veterinária, Departamento de Parasitologia Animal, Universidade Federal Rural do Rio de Janeiro, Caixa Postal 74508, Seropédica, RJ 23851-970, Brazil. E-mail: jlluque@ufrj.br.

This paper reports the occurrence of diphyllbothrid operculated eggs with abopercular knob, found in stool samples from 5 adult humans from Rio de Janeiro, who usually ate raw fish as sushi and sashimi, and presented gastrointestinal disturbances.

KEYWORDS: *Diphyllbothrium*, Cestoda, Pseudophyllidea, human parasitism, Brazil.

RESUMO

O presente trabalho relata a ocorrência de ovos de difilobotrídeos, operculados e com pequena protuberância abopercular, encontrados em amostras fecais de cinco humanos, adultos, provenientes da cidade do Rio de Janeiro, que apresentaram distúrbios gastrointestinais e usualmente consomem peixe cru como sushi e sashimi.

PALAVRAS-CHAVE: *Diphyllbothrium*, Cestoda, Pseudophyllidea, parasitismo humano, Brasil.

Diphyllbothriasis or diphyllbothriosis is an important zoonosis in North America, Northern Central Europe, Scandinavia, parts of Africa and Asia and even, South America (REVENGA, 1993). Humans became infected when accidentally ingest plerocercoids of *Diphyllbothrium* spp. (Cestoda, Pseudophyllidea) while eaten raw, undercooked or sometimes smoked fish. Recently, Bush et al. (2001) mentioned an estimative that there are up to nine million humans infected worldwide. According to Pancharatnam et al. (1998) about 13 species of *Diphyllbothrium* can cause human

diphyllbothriasis and *D. latum* and *D. dendriticum* were the most prevalent. To date, only three species were found in South America, *D. latum* and *D. dendriticum* with freshwater fishes, mainly salmon and trout as intermediate hosts and *D. pacificum* with marine cycle, and accounted for several reports of human diphyllbothriasis mainly in Argentine, Chile and Peru (BAER, 1969; SEMENAS; UBEDA, 1997; TORRES et al., 1998; SEMENAS et al., 2001). Recently, Eduardo et al. (2005a) reported 23 cases of autochthonous human diphyllbothriasis from São Paulo, Brazil. Eduardo et al. (2005b) reported additional one allochthonous case and 21 cases of autochthonous human diphyllbothriasis from 11 municipalities of the State of São Paulo, Brazil and appointed *D. latum* as the mainly responsible for these cases.

Between August and November 2004, five adult humans living in Rio de Janeiro, RJ, Brazil who usually ate raw fish as sushi and sashimi and without history of recent international travel, with diarrhea and abdominal pain were seen as an outpatient by general physicians and directed to the same private clinical pathology laboratory. Stools examination revealed an unusual helminth infection and patients were treated with antihelminthic drug and accompanied until disappearance of symptoms. To improve helminthological diagnosis, stool samples were sent to Laboratório de Ictioparasitologia, Departamento de Parasitologia Animal, Universidade Federal Rural do Rio de Janeiro. Stool samples were centrifuged to sediment and examined. Measurement of the eggs were made in micrometers (µm), the means are

¹ Curso de Pós-Graduação em Ciências Veterinárias, Universidade Federal Rural do Rio de Janeiro, Seropédica, RJ, Brasil.

² Departamento de Parasitologia Animal, Universidade Federal Rural do Rio de Janeiro, Caixa Postal 74508, CEP 23851-970, Seropédica, RJ, Brasil. E-mail: jlluque@ufrj.br.

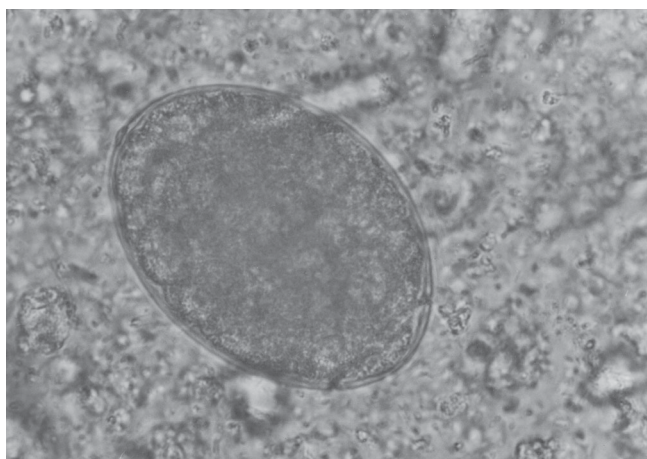


Figure 1. Operculated egg of *Diphyllbothrium* sp. found in patient stool sample, measuring 77.9 x 54.9 μ m.

followed by range in parenthesis. Microscopical examination revealed a great number of broadly oval, yellowish-brown operculated eggs (Figure 1) measuring 76.2 (75.1 – 77.9) length and 53.1 (51.9 – 54.9) width and 1.44 length – width ratio (N= 20). Abopercular knob observable on some eggs. Eggs containing oncospheres were not found. These features resembled *Diphyllbothrium* sp. and specific determination could not be done, once egg size and form constitutes dubious taxonomic criteria in this genus and morphology of adult proglottids is more suitable for specific taxonomic determination (ANDERSEN; HALVORSEN, 1978; SEMENAS; UBEDA, 1997; PANCHARATNAM et al., 1998; SEMENAS et al., 2001). Lack of information about fish species, may also difficult specific diagnosis.

Eduardo et al. (2005a,b) suggested that the Chilean salmon is the fish involved in diphyllbothriasis transmission in São Paulo, Brazil. In April 2005, we additionally examined in a candling table and with microscopical observation, 48 specimens of Atlantic salmon, *Salmo salar*, weighting 4.4 – 5.4 Kg, imported from Chile and obtained from three different commercial dealers from Rio de Janeiro in order to detect plerocercoids of *Diphyllbothrium* spp. but no parasites were found.

According to McCarthy and Moore (2000), changes in dietary practice is an important factor involved in emergence of zoonotic helminth infections, which have led to the increased opportunity for exposure to the risk factors. This emphasizes the importance of raw, undercooked or smoked fish consumption as an example of change in food habits that increased the exposure to helminth infections. Recently growth in demand of raw fish products in Brazil and scarcity of information about fish-borne diseases would suggest that this illness could be more usual. Despite some gastrointestinal disturbances produced by *Diphyllbothrium* spp., the absence of symptomatology in several cases may contributes to the underdiagnose condition of this disease (SEMENAS; UBEDA, 1997; RAETHER; HÄNEL, 2003).

Is interesting to note that about half the carriers of *D. latum* has a decreased cyanocobalamin serum level (RAETHER; HÄNEL, 2003).

Plerocercoids of *D. latum* and *D. dendriticum* were reported parasitic in salmonid fishes from Argentine and Chile, and plerocercoids of *D. pacificum* in several marine fishes from Peru (ESCALANTE et al., 1988; SEMENAS et al., 2001; HOLYDAY et al., 2003; TORRES et al., 2004). Studies on diphyllbothriid plerocercoids parasitic in Brazilian fishes are unknown and reinforce the necessity of further studies on Brazilian fishes parasites. Moreover, occurrence of plerocercoids of *Diphyllbothrium* spp. in fishes could be important to predict the distribution of human cases and to determine if these cases are allochthonous or autochthonous. In relation to diphyllbothriid marine species, Luque and Poulin (2004) studied the larval helminths of 50 species of marine fishes from the State of Rio de Janeiro and plerocercoids were not founded.

In addition of health impact, diphyllbothriasis could also have economic impact because rejection of not certified fish products and establishments but, indirectly, measures of control of diphyllbothriasis could have a positive impact in the development of high quality certified products, able to attend international demand of safety food.

On an individual basis, the infection with *Diphyllbothrium* spp. is preventable by eating well-cooked fish, deep freezing of fish or roe at least -10° C for 24 h, or placing the fish in a sufficient concentration of brine 12% NaCl (RAETHER; HÄNEL, 2003). Also, the United States Food and Drug Administration suggested that fishes intended for raw (or semiraw such as marinated or partly cooked) consumption be blast frozen to -35° C or below for 15 hours, or be regularly frozen to -20° C or below for seven days (FDA, 2003).

Therefore, some measures should be implemented to prevent emergence of these fish-borne zoonosis. These including: (1) implementation of rigorous sanitary inspection for fish products and (2) development of a sanitary education program with the diffusion of educative information for all population segments: consumers, health professionals, fishermen and sellers among others.

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