

New cases of human diphyllbothriosis in Patagonia, Argentine*

Novos casos de difilobotriosis humana na região da Patagônia, Argentina

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Keywords

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Descritores

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Abstract

The purpose of the paper is to describe 4 new cases of human diphyllbothriosis in Patagonia, Argentine. Adult parasites recovered were submitted to morphological and histological analyses for taxonomic identification. The etiological agent found was always *Diphyllbothrium latum* and all the cases were autochthonous. These data combined with previous information make the number of autochthonous human cases of diphyllbothriosis registered in Argentina increase to 18.

Resumo

Foram descritos 4 novos casos de difilobotriosis humana na Patagônia, Argentina. Os parasitas adultos foram submetidos a análises morfológicas e histológicas para identificação taxonômica. O agente etiológico foi sempre *Diphyllbothrium latum*, e todos os casos de difilobotriosis foram autóctones. Esses novos registros se somam aos já previamente detectados, totalizando 18 casos humanos autóctones registrados na Argentina.

Diphyllbothriosis is an ictic zoonosis acquired by humans when they accidentally ingest plerocercoids while eating raw, undercooked and sometimes smoked fish.² Restricted to Northern Central Europe till past century, this disease has now spread to other temperate latitudes, and a human case was even described in India.³

Of all known species of *Diphyllbothrium* only 3 are found in South America: *D. pacificum* with marine cycle and *D. latum* and *D. dendriticum* with freshwater cycle, these latter two were brought to South America via European immigrants.⁵

The first case of human diphyllbothriosis was registered in Argentina in 1911, in a young Russian

immigrant who had just arrived in the country.¹ Seventy years passed until the first autochthonous case was identified in 1982.⁴ *D. latum* is recognized as the only etiological agent of diphyllbothriosis in Argentina and the disease is restricted to the Andean Patagonia.⁵

The purpose of this study is to describe 4 new cases of diphyllbothriosis in Patagonia (Argentina).

Medical records of health facilities in the provinces of Neuquén (public hospital of San Martín de los Andes) and Río Negro (Private Hospital Bariloche), from 1994 to 1999, were revised and parasitological material was obtained from institutional collections and examined.

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Adults and eggs were identified. Adults were submitted to morphological and histological analyses. Materials were fixed in 10% buffered formol and 70% ethanol or AFA (ethanol 85 ml, formaldehyde 10 ml, and acetic acid 10 ml). Adults were immersed in 45% acetic acid to remove the cortical parenchyma or in lactophenol to clarify the proglottides, to improve the observation of genital and uterine pores and uterine loops. For the histological analysis, specimens fixed with 10% buffered formol were used and serial longitudinal and sagittal (in the midline of proglottides) sections were performed (5 µm a 7 µm). All the histological materials were stained with hematoxylin-eosin. Eggs obtained from proglottides were measured (length, width and thickness of membrane) and the presence of operculum and knob were registered.

Proglottides were characterized for the presence of uterus with a posterior portion closely coiled and an anterior one with 4 to 7, most frequently 5 loops at both sides of the midline, presence of constriction between proglottides, presence of cirro – vaginal aperture situated in the first half of the ventral surface, and a round or oval ovary. Longitudinal histological sections show vitellaria and testis arranged laterally in 2 separated lateral fields without connection between them. Sagittal histological sections show an elliptical seminal vesicle in a caudal position to the cirrus sac and a rounded to oval cirrus sac situated horizontally in the segment. Types in Helminthological Collection of Centro Regional Bariloche (P 94/1-4, P124/1, F 125/1-3). Eggs were oval with an operculum and a knob. One hundred eggs were measured in each case and the medium size were 73 µm in length, 50 µm in width, 1.6 µm in membrane width and 1.4 length – width ratio.

Although eggs are of little value for a reliable species diagnosis, all the other analyzed characteristics enabled to assign the 4 recovered specimens to *D. latum*.

The presence of *D. latum* and *D. dendriticum* has

been reported in freshwater bodies⁴ of Andean Patagonia but the latter species has not been documented as a parasite to humans. *D. latum* continues to be the only etiological agent of human diphyllbothriosis in Patagonia. These data combined other collected information⁵ increase the number of autochthonous cases of diphyllbothriosis reported in Argentina to 18. Other two cases were suspected but, as parasitological material was not available for analysis, they cannot be included as positive ones.

Characteristics of infection in the 4 cases are shown in the Table. The spontaneous elimination of the parasite, the absence of symptomatology in patients, the simple infestation and the ingestion of salmonids are epidemiologically in accordance with previous cases and with general characteristics of diphyllbothriosis in other parts of the world.^{4,5}

Presence of plerocercoids of *D. latum* and *D. dendriticum* in *Salmo trutta*, *Salvelinus fontinalis*, *S. salar* and *Oncorhynchus mykiss* of numerous water bodies between lake Huechulafquen (39°46'S) and lake Rosario (43°15'S), including the provinces of Neuquén, Río Negro and Chubut,⁴ let one presume their presence in the majority of waterbeds of the region. The great development of fishing sport in Patagonia and the prevalence of plerocercosis in different species of salmonids^{4,5} would indicate that this illness is probably underdiagnosed in humans in that region.

Only 2 countries in South America, Chile and Argentina,⁵ have reported autochthonous human cases of diphyllbothriosis by *D. latum*. Presence of introduced salmonids in lakes, water temperatures and vicariant species of copepod enable this species cycle to develop in the southern temperate part of America, where human cases were described in both these countries in the beginning of the century.

The epidemiology patterns of some illnesses has been changing with the increase in demands and a larger

Table - Characteristics of human cases of diphyllbothriosis in argentinian Patagonia.

Cases	1	2	3	4
Age	38	45	8	41
Sex	M	M	F	M
Status	resident fisher	resident fisher	resident fisher	resident fishguide
Spontaneous elimination	yes	yes	yes	yes
Abdominal pain and/or nausea	no	no	no	no
Weight and appetite loss	no	yes	no	no
Medication	praziquantel	niclosamide	?	praziquantel
Year	1997	1994	1997	1997
Adult length (m)*	4,3	1,4	0,25	6,7
Infection type	simple	simple	simple	simple
Province	Neuquén	Neuquén	Neuquén	Río Negro

*only part of strobila was recovered

distribution of raw (sushi, sashimi) and smoked ictic meat, which could have a subsequent economical and health impact as they can cause diphyllbothriosis.^{2,6}

Therefore, an adequate sanitary education of the population and an appropriate diffusion seems to be the best strategy for controlling this illness.

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