

Revista de Saúde Pública

JOURNAL OF PUBLIC HEALTH

Human case of gastric infection by a fourth larval stage of *Pseudoterranova decipiens* (Nematoda, Anisakidae)

Relato de parasitismo por nematódeo Anisakidae em homem

Rubén Mercado, Patricio Torres and Jorge Maira

Departamento de Parasitología de la Universidad de Chile. Santiago, Chile (R.M.); Instituto de Parasitología de la Universidad Austral de Chile. Valdivia, Chile (P.T.); Clínica Integramédica. Sección Gastroenterología. Santiago, Chile (J.M.)

MERCADO, Rubén, Human case of gastric infection by a fourth larval stage of *Pseudoterranova decipiens* (Nematoda, Anisakidae). *Rev. Saúde Pública*, 31 (2): 178-81, 1997.

Human case of gastric infection by a fourth larval stage of *Pseudoterranova decipiens* (Nematoda, Anisakidae)*

Relato de parasitismo por nematódeo Anisakidae em homem

Rubén Mercado, Patricio Torres and Jorge Maira

Departamento de Parasitología de la Universidad de Chile. Santiago, Chile (R.M.); Instituto de Parasitología de la Universidad Austral de Chile. Valdivia, Chile (P.T.); Clínica Integramédica. Sección Gastroenterología. Santiago, Chile (J.M.)

Abstract

Only three cases of human infection by anisakid nematodes have been reported in Chile since 1976. In the present case, an anisakid worm, identified as a fourth-stage *Pseudoterranova decipiens* larva, was removed with a gastroendoscopic biopsy clipper from the stomach of a 45 year-old man from southern Chile. The patient, who presented acute epigastric pain and a continuous sensation of having an empty stomach, reported having eaten smoked fish. The worm was fixed in 70% ethanol and cleaned in lactophenol for morphological study. The morphometric characteristics of the worm are described and drawn. Anisakid larvae in fish flesh can be killed by freezing or cooking.

Nematode infections. Anisakiasis.

Resumo

Um anisakídio, identificado como larva do quarto estágio de Pseudoterranova decipiens, foi isolado por gastroendoscopia do estômago de uma pessoa de 45 anos de idade, residente no Sul do Chile. Relata-se que o paciente apresentou dor epigástrica aguda e sensação de estômago vazio, tendo ingerido peixe defumado. O nematode foi fixado em etanol 70% e diafanizado com lactofenol para estudo morfológico.

Infecções por nematóides. Anisakiase.

* Presented in the XII Congreso Latinoamericano de Parasitología (October, 1995), Santiago, Chile. Supported by Dirección de Investigación y Desarrollo: Universidad Austral de Chile. Proyecto S-94-24.

Correspondence to: Patricio Torres - Instituto de Parasitología de la Facultad de Medicina de la Universidad Austral de Chile, Isla Teja. Avenida Inés de Haverbeck n° 12. Valdivia, Chile. Fax: 063-214475.

Received on 12.11.1996. Approved on 25.11.1996.

Resumen

Un gusano anisákido identificado como larva del cuarto estadio de *Pseudoterranova decipiens* fue aislado mediante gastroendoscopia en el estómago de una persona de 45 años, residente en el sur de Chile. Se relató que el paciente presentó dolor epigástrico agudo y sensación de estómago vacío, siendo consumidor de pescado ahumado. El gusano fue fijado en etanol de 70% y diafanizado en lactofenol para su estudio morfológico.

Infecciones por nematodos. Anisakiasis.

In Chile, four food-borne helminthic zoonoses are associated with the consumption of raw, smoked or undercooked fish. Two of those infections are caused by the nematodes *Anisakis simplex* and *Pseudoterranova decipiens*, and the other two are produced by the cestodes *Diphyllobothrium latum* and *Diphyllobothrium pacificum*. Except for *D. latum* which infects salmonids and autochthonous fish introduced into sweetwater¹⁶, other parasites are transmitted to man by his eating sea fish^{9, 15, 17}.

Human infections produced by larval stages of *P. decipiens* are commonly named anisakiasis in the broad sense⁵, codworm anisakiasis¹² or Pseudoterranovosis according to standardized nomenclature of animal parasitic diseases⁶. Although third or fourth stage larvae of anisakid worms can produce human infections, the latter are only rarely found^{4, 5}.

To the present day in Chile, only three cases of human infection produced by anisakid worms have been reported^{1, 14, 20}. It is described a new case of human infection, produced by a fourth larval stage of *P. decipiens* in a patient who resided in the south of Chile.

A 45 year-old man, living in Coihaique City (45°33'S Lat., 72°06'W Long) travelled periodically to Santiago on business. In June 1995, he presented acute epigastric pain and a sensation of an empty stomach which continued for three days. No other symptoms were registered. He was given a gastric endoscopy without any other laboratory exams and had no morbid antecedents. The patient reported having eaten smoked fish. Endoscopic study showed a nematode fixed to the slightly, hyperaemic gastric mucous in the posterior region, whence it was removed directly with a gastroendoscopic biopsy clipper.

The nematode was fixed in ethanol 70% and was later cleaned in lactophenol for morphometric studies (Figure). Measurements are in mm: the body of the larva was 32.2 in length; greatest diameter near midbody was 0.72. The mouth had three lips: a dorsal one showed two double papillae and each subventral



Figure - Larva of *Pseudoterranova decipiens*: m = mouth, p = preventriculus, c = intestinal cecum, i = intestine, v = ventriculus, a = anus.

lip presented a single double papilla. Interlabia and boring tooth were absent. Excretory pore opened between two subventral lips. Nerve ring was 0.41 from anterior end. Esophagus or preventricule measured 2.2 in length and 0.27 at maximum width. Ventricule and intestinal cecum were 1.1 in length. The tail was 0.2 in length with a knoblike process.

The morphometric characteristics of the recovered larva corresponded to a fourth stage of *P. decipiens*⁴ and it is the first report of this larval stage in a human case in Chile.

Nagano¹⁰ reported that human cases of infection produced by *P. decipiens* in Japan involved the stomach of the patients. Our observation is in agreement with that finding.

About 18 species of marine fish (Table) have been reported as hosts of the third larval stage of codworm

Table - Marine fish hosts of codworm in Chile.

Chondrichthyes	
Scyliorhinidae	
	<i>Schroeder ichthys chilensis</i> (Smith, 1813)
Rhinobatidae	
	<i>Raja (Dipturus) chilensis</i> Guichenot, 1848
Teleostomi	
Ophidiidae	
	<i>Genypterus chilensis</i> (Guichenot, 1848)
	<i>Genypterus blacodes</i> (Schneider, 1801)
	<i>Genypterus maculatus</i> (Tschudi, 1846)
Sciaenidae	
	<i>Cilus gilbertti</i> (Abbott, 1899)
Carangidae	
	<i>Trachurus murphyi</i> Nichols, 1920
Mugilidae	
	<i>Mugil cephalus</i> Linnaeus, 1758
Merlucciidae	
	<i>Merluccius gayi</i> (Guichenot, 1848)
Macrouronidae	
	<i>Macrouron magellanicus</i> Lönnberg, 1907
Bothidae	
	<i>Hippoglossina montemaris</i> De Buen, 1961
	<i>Hippoglossina macrops</i> Steindachner, 1876
	<i>Paralichthys microps</i> (Günther, 1881)
	<i>Paralichthys adpersus</i> (Steindachner, 1867)
Batrachoididae	
	<i>Aphos porosus</i> (Valenciennes, 1837)
Scorpaenidae	
	<i>Helicolenus lengerichi</i> Norman, 1937

in Chile^{2, 3, 11, 15}. Adults of *P. decipiens* have been identified from seals *Otaria byronia* and *Arctocephalus philippi* in Chile¹⁵. Also, adults of *Pseudoterranova* sp. have been isolated in the dolphin *Cephalorhynchus eutropia* and in the porpoise *Phocoena spinipinnis*¹⁸. Genetic studies of *P. decipiens* recovered from sea mammals captured in the north Atlantic and Norwegian and Barents seas showed that *P. decipiens* is a complex of at least three sibling species¹³.

Sapunar et al.¹⁴ described the first case of anisakiasis in Chile in a women of 35 years old from Santiago. In this case one larva of *Anisakis* sp. was expectorated by the patient and an other was eliminated with the faeces after treatment with mebendazole. Apt et al.¹ described a second case in a female of Japanese ancestry. A worm was removed with the biopsy forceps from the stomach of the patient. It was identified as a *Pseudoterranova* sp. larva. Verhamme and Rauher²⁰ described a case of intestinal anisakiasis in a Belgian tourist who probably acquired the infection in Chile. Worms were not recovered from this patient.

Anisakid larvae present in fish flesh would be killed by freezing at -20°C for 60 hrs⁹. According to Margolis⁷ cooking 3 cm-thick fish fillets of at 70°C or 60°C for 7 or 10 minutes, respectively, should kill any codworm larvae present.

REFERENCES

1. APT, W. et al. Anisakiasis gástrica en Chile. *Rev. Méd. Chile*, **108**: 825-7, 1980.
2. FERNANDEZ, J. Los parásitos de la lisa *Mugil cephalus* L., en Chile: sistemática y aspectos poblacionales (Perciformes: Mugilidae). *Gayana*, **51**: 3-58, 1987.
3. FERNANDEZ, J. & VILLALBA, C. *Proleptus carvajali* n. sp. (Nematoda: Spiruroidea), nuevos registros y lista sistemática de los nematodos de peces de aguas chilenas. *Rev. Chilena Hist. Nat.*, **58**: 109-20, 1985.
4. ISHII, Y. et al. Morphology of Anisakine larvae. In: Ishikura, H. & Namiki, M., ed. *Gastric anisakiasis in Japan*. Tokyo, Springer-Verlag, 1989. p. 19-29.
5. ISHIKURA, H. General survey of Anisakis and Anisakiasis in Japan. In: Ishikura, H. & Namiki, M., ed. *Gastric anisakiasis in Japan*. Tokyo, Springer-Verlag, 1989. p. 3-11.
6. KASSAI, T. et al. Standardized nomenclature of animal parasitic diseases (SNOAPAD). *Vet. Parasitol.*, **29**: 299-326.
7. MARGOLIS, L. Public health aspects of "codworm" infection: A review. *J. Fish. Res. Board. Canada*, **34**: 887-98, 1977.
8. MERCADO, R. et al. Infección por *Diphyllobothrium pacificum* probablemente adquirida en el sur de Chile, por un niño de tres años. *Bol. Chileno Parasitol.*, **43**: 54-6, 1988.
9. MYERS, B.J. Research then and now on the Anisakidae nematodes. *Trans. Am. Microsc. Soc.*, **95**: 137-42, 1976.
10. NAGANO, K. Gastric terranovasis. In: Ishikura, H.M. & Namiki, M., ed. *Gastric anisakiasis in Japan*. Tokyo, Springer-Verlag, 1989. p. 133-40.
11. OLIVA, M.E. et al. Parasites of the flatfish *Paralichthys adpersus* (Steindachner, 1867) (Pleuronectiformes) from northern Chile. *Mem. Inst. Oswaldo Cruz*, **91**: 301-6, 1996.
12. OSHIMA, T. Anisakiasis - Is the sushi bar Guilty? *Parasitol. Today*, **3**: 44-8, 1987.
13. PAGGI, L. et al. Genetic evidence for three species within *Pseudoterranova decipiens* (Nematoda, Ascaridida, Ascaridoidea) in the north Atlantic an Norwegian and Barents seas. *Int. J. Parasitol.*, **21**: 195-212, 1991.

14. SAPUNAR, J. et al. Anisakiasis humana en Chile. *Bol. Chileno Parasitol.*, **31**: 79-83, 1976.
15. TORRES, P. et al. Anisakiasis and phocanemiasis in marine fishes from the South of Chile. *In. J. Zoon.*, **10**: 146-50, 1983.
16. TORRES, P. et al. Epidemiología de la difilobotriasis en la cuenca del río Valdivia, Chile. *Rev. Saúde Pública*, **23**: 45-57, 1989.
17. TORRES, P. & PEREZ, C. Difilobotriasis. In: Afías, A. & Neghme, A., ed. *Parasitología clínica*. Santiago, Editorial Mediterráneo, 1991. p. 203-12.
18. TORRES, P. et al. Gastrointestinal helminths of the cetacean *Phocoena spinipinnis* (Burmeister, 1865) and *Cephalorhynchus eutropia* (Gray, 1846) from the Southern coast of Chile. *J. Wild. Dis.*, **28**: 313-5, 1992.
19. TORRES, et al. Registro de nuevos casos de difilobotriasis humana en Chile (1981-1992), incluido un caso de infección múltiple por *Diphyllobothrium latum*. *Bol. Chileno Parasitol.*, **48**: 39-43, 1993.
20. VERHAMME, M.A.M. & RAMBOER, C.H.R. Anisakiasis caused by herring in vinegar: a little know medical problem. *Gut*, **29**: 843-7, 1988.