

CURRENT STATUS OF GNATHOSTOMIASIS DOROLESI IN MIYAZAKI PREFECTURE, JAPAN

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Abstract. Gnathostomiasis is an important food-borne parasitic zoonosis caused mainly by ingesting uncooked or undercooked flesh of freshwater fishes. Although four distinct species of the genus *Gnathostoma* were identified as the causative agents for human gnathostomiasis, human infections with *G. doloresi* have been found only in Japan, concentrated in Miyazaki Prefecture. So far we have found 25 cases in Miyazaki Prefecture. Although most of these patients were of cutaneous gnathostomiasis, two patients presented to the hospital with unusual clinical manifestations; one case was a pulmonary gnathostomiasis diagnosed by immunoserological methods, and the other was an ileus caused by migration of the late 3rd stage larva in the colonic tissue, which was found by post-operative histopathological examination. Although cutaneous lesions such as creeping eruption or mobile erythema are the common clinical features of gnathostomiasis, caution should be paid to the presence of such unusual cases.

INTRODUCTION

Gnathostomiasis is an important food-borne parasitic zoonosis especially in Asian countries (Daengsvang, 1980). In Japan, the first and major outbreak of gnathostomiasis noted around the 1940-60s were caused by infection with *G. spinigerum* (Miyazaki, 1960). The second outbreak occurred in the urban areas in the 1980s was proven to be caused by the infection with *G. spinigerum*, which were contaminated in the imported loaches (Akahane *et al*, 1982). In addition, Ando *et al* (1988) reported two cases of cutaneous gnathostomiasis in Mie Prefecture, Japan, of which pathogen was identified as *G. nipponicum*. About the same time, we found a new outbreak of gnathostomiasis caused by *G. doloresi* in Miyazaki Prefecture, Japan (Ogata *et al*, 1988; Nawa *et al*, 1989). In this paper, we will make a brief summary of the accumulated cases during recent 10 years and will introduce two recently experienced, unusual cases of gnathostomiasis doloresi.

CASE REPORT

Until now, 25 cases of gnathostomiasis doloresi were found in Miyazaki Prefecture. Among these, 22 cases (Table 1) were diagnosed and treated in the Department of Dermatology, One case in the First Department of Internal Medicine, Miyazaki Medical College, and two unusual cases from the related hospitals. In addition, a few cases from other areas of Japan have been reported most of which were found in areas adjacent to Miyazaki Prefecture (Fig 1). Although the majority of the patients found in Miyazaki Prefecture presented to hospitals with characteristic creeping eruption and/or mobile erythema in the skin, we recently encountered two unusual forms of gnathostomiasis. The first case was a serologically diagnosed pulmonary gnathostomiasis and the second one was a colonic ileus due to eosinophilic nodular lesions formed around *G. doloresi* larvae.

Case #1 (Miyamoto *et al*, 1994):

A 38-year-old male presented to a hospital because of chest pain and high fever. Chest radiogram and CT revealed a nodular lesion in r-lung. Eosinophilia (16.9%) was noted by laboratory examinations. Although paragonimiasis, which is also endemic in Miyazaki Prefecture, was strongly suspected,

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the patient's serum was positive against *G. doloresi* antigen but negative against *Paragonimus* or other parasite antigens. Retrospective study revealed that

the patient frequently eats various kinds of freshwater fish. Specific antibody titers in the serial serum samples of the patient paralleled well with the clinical course.

Table 1
Gnathostomiasis doloresi cases found in Miyazaki Prefecture, Japan.

No.	Case	Age	Sex	Onset	Skin lesion	WBC /mm ³	EO (%)	IgE IU/ml	Parasite found	Source of infection
1	HM	51	M	5/85	C	11,600	14.5	4,800	-	fish-A
2	KC	40	M	4/85	C + Q	9,800	12.0	<500	-	snake
3	TK	70	M	7/85	C	12,200	67.0	16,000	+	fish-C
4	YA	38	F	4/86	C	4,700	16.0	ND	ND	fish-A
5	IK	35	M	4/86	Q	6,000	21.2	682	+	fish-A
6	KA	58	M	3/87	Q	7,800	14.2	83	-	fish-C
7	IE	34	F	1/88	Q	5,000	12.0	586	-	fish-A
8	NM	61	M	5/88	C	7,200	6.0	>4,000	+	fish-A
9	IS	46	F	6/88	C + Q	9,000	16.0	352	-	fish-C
10	KS	35	M	9/88	C + Q	9,000	16.0	352	-	fish-A
11	NM	52	M	3/90	C	7,350	8.0	107	-	fish-C
12	NM	55	F	4/90	C	9,500	13.9	50	+	fish-B
13	NM	60	M	6/90	C + Q	4,800	25.5	10,833	ND	fish-C
14	OH	55	M	8/90	C + Q	7,200	22.1	298	ND	fish-C
15	NK	54	M	7/91	C	7,400	7.1	824	-	fish-C
16	KK	43	F	7/91	C + Q	9,200	18.0	860	-	fish-C
17	OC	26	F	3/92	C + Q	7,800	11.6	495	-	fish-B,C
18	NT	44	M	6/92	C + Q	4,900	14.9	77	-	fish-A
19	NM	60	F	9/92	C	6,900	9.0	37	+	fish-A
20	ET	48	M	10/92	C + Q	8,000	10.4	291	ND	fish-A
21	YK	44	M	9/94	C	8,000	8.3	2,715	-	fish-A,C
22	TY	45	M	11/94	Q	4,300	11.5	1,349	-	fish-A,C

C: creeping eruption, Q: mobile erythema, ND: not determined,
fish-A: brook trout, *Oncorhynchus masou*, fish-B: blue-gill, *Lepomis macrochirus*, Fish-C: other fresh water fishes

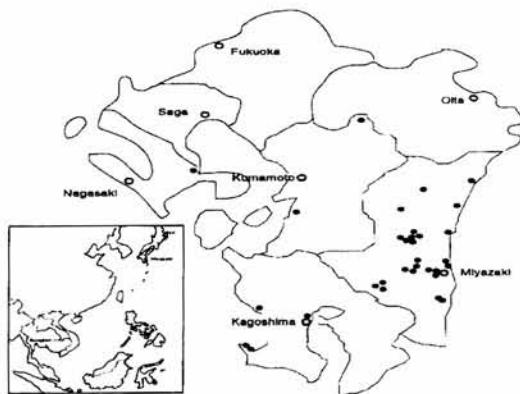


Fig 1 - Distribution of the gnathostomiasis doloresi patients found in and around Miyazaki Prefecture, Kyushu, Japan.

Case #2 (Seguchi *et al*, 1995)

The patient, a 57-year-old male, developed severe abdominal pain and was diagnosed as colonic ileus. A tumor in the ascending colon found by a barium enema was surgically removed by simple colonic resection. Postoperative histopathologic examination revealed a section of a parasite surrounded by massive eosinophilic infiltration. The entire body of the advanced 3rd stage larva of *G. doloresi* was dissected from a specimen-embedded paraffin block. After the diagnosis was made, the patient stated that he had eaten several pieces of uncooked snake meats one week before the onset of the present illness.

DISCUSSION

Like infections with other *Gnathostoma* species, creeping eruption and/or mobile erythema of the skin is the most common feature of *G. doloresi* infection. However, as was reported by Daengsvang (1980), *G. spinigerum* larvae may emerge from almost any area of the human body to cause unusual symptoms. The present results show that *G. doloresi* larvae can also migrate to almost any location in the human body and give rise to a variety of clinical manifestations.

As the source of infection, the majority of the patients reported here has a past history of ingesting uncooked or undercooked freshwater fishes. We found the advanced 3rd stage larvae of *G. doloresi* from the freshwater fish, *Lepomis macrochirus* Rafinesque (common name: blue-gill) caught in the endemic area (Nawa *et al.*, 1993). In addition, one of the patients reported here ate uncooked meat of a snake, *Agkistrodon halys*, which has been proven as the paratenic host of *G. doloresi* (Imai *et al.*, 1988).

Although detection of the larvae in the biopsied specimen from the lesion is ideal, this is frequently unsuccessful. Therefore, in most cases, the diagnosis is made by the combination of clinical manifestations, obtaining a history of ingesting intermediate and/or paratenic hosts, and immunoserological examinations. In extraordinary cases like the present report, a patient's history of ingesting particular food is extremely helpful to reach correct diagnosis.

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