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Research Note

A Case of Severe Metagonimiasis with Abdominal Symptoms

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Metagonimiasis yokogawai is caused by an infection with the intestinal trematode, *Metagonimus yokogawai,* the metacercariae of which are ingested by eating freshwater fishes. Miyazaki Prefecture has long been known as one of the major endemic areas of this disease in Japan, because people living in this area often eats raw sliced meats ("Segoshi") of *Plecoglossus altivelis* (common Japanese name "Ayu"), a famous 2nd intermediate host of this parasite. Usually an infection with this parasite is asymptomatic and the majority of the cases are found as healthy carriers by mass examination for parasite eggs in stool. Even in cases of a heavy infection, patients not always show abdominal pain, diarrhea, malabsorption, and weight loss. The purpose of this paper is to report a typical severe case of metagonimiasis with abdominal symptoms recently found in Miyazaki Prefecture, southern Japan.

Case Report

History

A 57-year-old male: He was born in Nichinan City, Miyazaki Prefecture, and has no experience of traveling overseas. He often eats raw sliced meat of freshwater fish, *P. altivelis,* which he catches by himself at various rivers in Miyazaki Prefecture. At first on Nov. 1987 he complained of intractable diarrhea and abdominal pain. When he consulted a regional clinic on March 1988, no particular changes were noted by the examination of the digestive tract. However, his body weight, 66 kg at healthy condition, gradually decreased by intractable diarrhea. On Feb. 1989, his body weight reduced to 51 kg (−15 kg for 6 months). Since malignant diseases of the digestive tract were suspected, he was admitted to the First Department of Internal Medicine, Miyazaki Medical College on March 1989 for work-up.

Physical Examination and Laboratory Findings on Admission

Height 157 cm, Weight 54.5 kg, Blood pressure 132/80 mm Hg. The lungs and heart were normal. The abdomen was flat and soft.

RBC $442\times10^4/mm^3$, Hb 14.5 g/dL, Ht 43%, WBC $5{,}900/mm^3$ (neutrophils 54%, lymphocytes 34%, monocytes 7%, eosinophils 5%), platelets $16.3\times10^4/mm^3$; Na 142 mEq/L, K 4.8 mEq/L, Cl 109 mEq/L, total protein 6.93 g/dL, GOT 15 IU/L, GPT 21 IU/L, LDH 221 IU/L; CRP (±), IgE 261 U/mL, Anti-HTLV-I antibody (ATLA: +).

Pathological changes were not found by examinations of upper and lower gastrointestinal tract nor by abdominal echo, CT, Ga-scintigraphy.

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Stool Examination

Soft, brownish yellow in colour, foul odour and voluminous. Occult blood (−). Numerous parasite eggs were found by a direct wet mount preparation of the stool. The eggs were oval (28−32 × 14−16 um), pale yellowish brown in colour, operculated, and had a small knob or thickening on the abopercular end. Based on the morphological appearance, they were identified as *M. yokogawai* eggs.

Clinical Course

He was treated with a single administration of praziquantel (Biltricide: Bayer; 25 mg/kg) without using purgatives. The efficacy of the treatment was monitored by daily fecal egg count using a modified method (Kagei, 1965) of Stoll's quantitative egg counting method (Fig. 1). After the treatment, whole amount of stool was collected every 24 hr for 3 days to examine the presence of adult worms. Only few intact adult worms, identified morphologically as *M. yokogawai,* were found in the stool collected for the first 24 hr. Within a week or so, diarrhea gradually disappeared. Since a few eggs were still found in the stool one week after the first treatment, he received the 2nd dose of praziquantel. Three days later, fecal egg count became zero and the recurrence was not observed by now. His body weight slowly but gradually increased up to 55 kg by now.

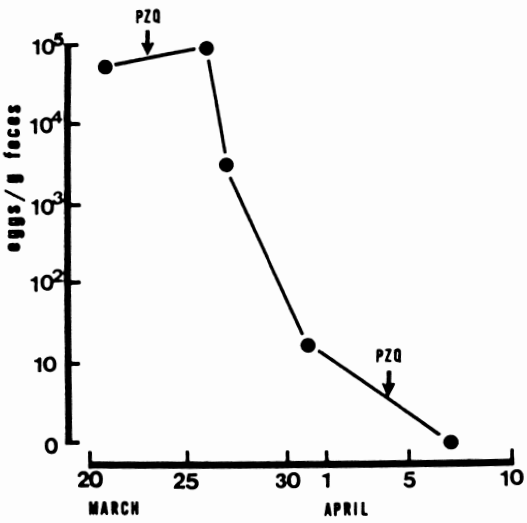

Fig. 1. Daily fecal egg count of the patient. PZQ: plaziquantel treatment

In Miyazaki Prefecture, in spite of the drastic decrease of the prevalence of various food-borne parasitic diseases, metagonimiasis cases are rather gradually increasing with time (Itoyama, 1988). This is probably due to an easier availability of the second intermediate host, *P. altivelis,* by the recent development of mass cultivation. A high rate of infection in *P. altivelis* with the metacercariae of *M. yokogawai* has been reported in Miyazaki Pref. (Kagei and Oshima, 1968).

In the present case, the highest EPG was about 97,000. According to Oshima (1965), adult worm of *M. yokogawai* produces 280 eggs per day and EPG per worm is 2.0. Thus, if the amount of feces per day is assumed as 200 g, the estimated number of adult worms in this patient is about 50,000−70,000. Since Nagayoshi (1949) reported a case of heavy infection with *M. yokogawai* in Nichinan City, Miyazaki Prefecture, cases of heavy infection were cocasionally recorded in various endemic areas in Japan (Kagei, 1965; Yokogawa *et al.*, 1973), although the majority of them were asymptomatic.

As for the treatment of metagonimiasis, Cho *et al.* (1984) reported that the cure rate by praziquantel treatment was 88% by single dose of 20 mg/kg and 100% by two doses of 20 mg/kg. Our results show that, even in such a severe case, two doses of 25 mg/kg praziquantel is highly effective resulting in complete cure.

Concerning the severity of the disease, one important point to be noted in the present case is that this patient is ATLA positive. Since close relationship between adult T-cell leukemia and strongyloidiasis has been reported (Nakada *et al.*, 1984; 1987; rev. by Yamaguchi 1989), further follow-up study and field survey is necessary to elucidate mutual effect between ATL and intestinal helminthiasis.

Although the patient reported here showed abdominal symptoms such as diarrhea and weight loss, similar symptoms were commonly observed in other intestinal helminthiasis and also in non-parasitic diseases. For example, recently we experienced an intestinal capillariasis case showing

intractable diarrhea, abdominal pain and weight loss (Nawa *et al.*, 1988). Thus, fecal egg examination is critically important as the first step of differential diagnosis.

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References

1) Cho, S.-Y., Kang, S.-Y. and Lee, J.-B. (1984): Metagonimiasis in Korea. Arzneim. Forsch., 34, 1211–1213.
2) Itoyama, A. (1988): Current Status of Parasitic Diseases in Miyazaki Prefecture. Ann. Rep. Publ. Hlth. Serv. 1987 (1987.4–1988.3), Watanabe, I., ed., 23–45. (in Japanese)
3) Kagei, N. (1965): Epidemiological studies of metagonimiasis in Japan. I. Epidemiological survey of metagonimiasis along the coast of Takatsu River, Shimane Prefecture. Bull. Inst. Publ. Hlth., 14, 213–227. (in Japanese with English abstract)
4) Kagei, N. and Oshima, T. (1968): Nationwide epidemiological surveys on the metacercariae of *Metagonimus yokogawai* in "Ayu", *Plecoglossus altivelis,* in Japan. Jpn. J. Parasitol., 17, 461–470. (in Japanese with English abstract)
5) Nagayoshi, K. (1949): A case of massive infection with *Metagonimus yokogawai* and a reappraisal of heterophydiasis. Medicine (Sogo-Igaku), 6, 683–686.
6) Nakada, K., Kohakura, M., Komoda, H. and Hinuma, Y. (1984): High incidence of HTLV antibody in carriers of *Strongyloides stercoralis.* Lancet, 1, 633.
7) Nakada, K., Yamaguchi, K., Furugen, S., Nakasone, T., Nakasone, K., Oshiro, Y., Kohakura, M., Hinuma, Y., Seiki, M., Yoshida, M., Matutes, E., Catovsky, D., Ishii, T. and Takatsuki, K. (1987): Monoclonal integration of HTLV-I proviral DNA in patients with strongyloidiasis. Int. J. Cancer, 40, 145–148.
8) Nawa, Y., Imai, J., Abe, T., Kisanuki, H. and Tsuda, K. (1988): A case report of intestinal capillariasis – The second case found in Japan. Jpn. J. Parasitol., 37, 113–118.
9) Oshima, T. (1965): Laboratory Examination and Diagnostic Methods. In Handbook of Human Parasitology., Matsubayashi H., ed., Asakura Shoten, Tokyo, 334–382. (in Japanese)
10) Yamaguchi, K. (1989): Natural history of ATL. Modern Medicine '89-6 (Japanese edn.), 18, 37–42. (in Japanese)
11) Yokogawa, M., Sano, M., Araki, K., Kobayashi, M., Kihata, M., Yoshimura, H., Ohmori, Y., Tani, S., Ishida, K., Suzuki, S., Kobayashi, H., Kyougoku, T., Yonekawa, N. and Toyoshima, M. (1973): Epidemiological studies on metagonimiasis in Chokai Village, Akita Prefecture. 2. Results of the treatment with various doses of Kamala for *Metagonimus* infections. Jpn. J. Parasitol., 22, 362–368.