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Epidemiological Report

Reports of Parasitic Diseases and Entomological Cases in the Department of Medical Zoology, Jichi Medical School: Accumulated Cases from Five Years

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SUMMARY: We summarized the consultation cases of parasitic diseases and entomological cases presented at the Department of Medical Zoology, Jichi Medical School. Among 173 consultations from January 1996 to December 2000, 64 cases were parasitologically or entomologically positive. We primarily diagnosed the cases morphologically and intermittently used sero-diagnosis methods. Ascariasis and diphyllobothriasis due to foods comprised the major consultation cases. Cases of malaria, second in frequency, were all imported from tropical countries. Some rare but important cases, including entomological cases, are discussed.

Jichi Medical School (JMS) was established by the governments of 47 prefectures in Japan in 1972 in order to train physicians who work in rural areas throughout Japan. Every year, the JMS accepts two or three students from each prefecture. The students are educated in medicine free of charge for 6 years, and then they are obligated to work in their own prefecture, particularly in rural areas, for 9 years after graduation. Graduates of the JMS are more likely to encounter parasitic diseases than doctors working in urban areas. Since the initiation of our department and the JMS hospital in 1974, we have conducted hundreds of consultations on parasitic diseases and medical entomological cases. Here, we describe the cases for which we have provided consultation during the past 5 years that involve parasitic diseases recently encountered in Japan; we also provide material for a comparison of parasitic diseases in other countries.

Among 173 consultations over a period of 5 years, 60% were from JMS Hospital and 40% were from other hospitals; doctors in 26 prefectures were consulted. The total number of diagnosed cases was 64.

Consultations for parasitological cases are listed in Table 1. Ascariasis and diphyllobothriasis were the most common parasitic diseases among the consultations. These two diseases are peculiar to Japan in terms of foods. Japanese people frequently eat fresh vegetables and raw fish. Ascariasis develops when people eat fresh vegetables bearing the mature eggs of *Ascaris lumbricoides*. Diphyllobothriasis occurs when raw trout or salmon containing plerocercoids of *Diphyllobothrium nihonkaiense* are ingested (1). These parasitic diseases were very common in Japan until the 1950s (2, 3). Since then, the incidence of both of these parasitic diseases has decreased because public health education has been made available and also because fecal examination and mass treatment were both performed in the 1960s. The commonly used fertilizers were also changed from feces and urine to chemically treated manure. These activities decreased the number of cases of parasitic nematodes such as ascaris, hook-worm, trichuria, etc. However, ascariasis is still encountered from time to time, as fecal manure is often used as a fertilizer in home vegetable gardens.

Among 14 cases of ascariasis, no case was diagnosed by fecal examination. In three cases, a worm was discovered orally; a worm was found in feces in seven cases; a worm was found by chance in one case by gastro-endoscopic examination due to another indication. In three cases, a worm was found in the common bile duct when endoscopic retrograde cholangio-pancreatography was performed due to patient complaints of acute upper-abdominal pain. The worm in these cases was extracted from the common bile duct by the endoscope; afterwards, the patients recovered from the pain associated with the infection.

Anisakiasis, paragonimiasis, and metagonimiasis are also common in Japan because they occur after the ingestion of raw fish - squid or mackerel - containing larvae of the *Anisakis* spp.; live crabs infected with metacercariae of *Paragonimus miyazakii* or *P. westermanii* can also cause this diseases, as can the ingestion of sweet-fish containing metacercariae of *Metagonimus yokogawai*. The incidence of these parasitic diseases has been reduced in number. However, these diseases have not yet been completely eradicated because Japanese people continue to ingest these species of raw fish.

We have diagnosed four cases of ocular toxocariasis among the cases reported by the Department of Ophthalmology at JMS Hospital. The cases had a typical mass formation in the fundus of eye, and also had histories of living with dogs or cats. Specific antibody to toxocara was detected by Toxocara CHECK (E-Y Laboratories Ltd., Hong Kong) and ELISA (4, 5). The cause in these cases was not only *Toxocara canis* (canine round worm) but also *T. cati* (feline round worm). Excessive contact with pets can be a cause of this larval migrant disease.

Pinworms (*Enterobius vermicularis*) were found by chance in a 72-year-old woman, whose large intestine was examined by endoscopy. A female whipworm (*Trichuris trichiura*) was

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Table 1. List of parasites reported to the Department of Medical Zoology, Jichi Medical School, Japan (January 1996 - December 2000)

Scientific Name	No.of Cases	Japanese		Alien	Diagnosed by	Place of Infection
		Domestic	Imported			
Protozoan(16 cases)						
Plasmodium falciparum	2		2		smear	Tanzania, Indonesia
Plasmodium vivax	6		4	2	smear	India, Indonesia, Sri Lanka
Plasmodium ovale	1			1	smear	Ghana
Entamoeba histolytica (colon)	1	1			smear	Tochigi
(liver)	1	1			smear	Tochigi
Blastocystis hominis	1	1			smear	Tochigi
Cryptosporidium parvum	1	1			smear	Saitama
Giardia lamblia	1		1		smear	Rumania
Leishmania spp.	1		1		serum	unknown
Trypanosoma cruzi	1			1	serum	Bolivia
Nematodes (24 cases)						
Ascaris lumbricoides	14	13	1		worm	Tochigi, Saitama, Ibaraki, Gunma, Yamaguchi, Vietnam
Toxocara spp.	4	4			serum	Saitama, Ibaraki
Anisakis spp.	2	2			worm	Tochigi
Enterobius vermicularis	1	1			worm	Tochigi
Trichuris trichiura	1	1			worm	Tochigi
Dirofilaria immitis	1	1			worm	Tochigi
Thelazia callipaeda	1	1			worm	Yamaguchi
Trematodes (5 cases)						
Paragonimus miyazakii	1	1			worm	Tochigi
Metagonimus yokogawai	2	2			egg, worm	Kagawa, Tochigi
Schistosoma haematobium	1		1		egg	Kenya
Clonorchis sinensis	1			1	egg	China
Cestodes (12 cases)						
Diphyllobothrium nihonkaiense	9	9			worm	Iwate, Tochigi, Saitama, Fukui
Taenia saginata	2			2	worm	Vietnam, Thai
Spirometra erinaceieuropaei	1		1		serum	China or Thai
Total	57	39	11	7		

also found endoscopically in the large intestine of a 78-year-old male. The reason for the endoscopic examination was to screen the patient for colon cancer. In both cases, parasites were found incidentally.

A larvae of dirofilaria (*Dirofilaria immitis*) was found in a tumor in the right lung of a 69-year-old male farmer. The tumor was removed with an intra-thorax scope. Diagnosis was made after the operation.

The larva of *Thelazia callipaeda* (three males and six females) were found in a hospital in Yamaguchi Prefecture. The larva were removed from the eye of a 77-year-old female who was an in-patient in the hospital. This nematoda usually infests dogs' eyes and is transmitted together with *Amiota* spp. (small flies, Japanese name "mematoi"). Human cases of *T. callipaeda* are reported mainly in western parts of Japan, because *Amiota* spp. are distributed in western parts of Japan.

Nine cases of malaria were all imported from foreign countries. These involved Japanese people who had traveled to tropical areas and foreign laborers, students, and their family members from tropical areas. More than ten million Japanese (about 10% of the Japanese population) travel abroad, and three million foreigners visit Japan every year. We cannot prevent malaria at the airports because of the latency period and the incidence of relapse of this disease. Even in a clinic in a rural area of Japan, it is possible to encounter a patient with malaria. Although we eradicated domestic malaria cases by 1962, some Anophline mosquitoes, *Anopheles sinensis*, *An. minimus*, *An. saperoi*, *An. omorii*, still survive in the rural areas of Japan (6,7). If the number of malaria parasite-carriers increases, the transmission of malaria might occur in Japan by these vector mosquitoes. In Korea, one reemerged case of *Plasmodium vivax* was reported in 1992 and the number of cases had increased to more than a thousand by 1999 (8).

Amebiasis by *Entamoeba histolytica* continues to occur in Japan. The cause of this disease used be water or food contamination by *E. histolytica* cysts. Currently in Japan, some cases are from foreign countries, but some are domestic. We have encountered domestic amebiasis in hospitals for the elderly and in homosexual men.

The opportunity for the diagnosis of parasitic diseases by fecal examination is very rare. Among 57 cases of parasitic diseases, only four cases were diagnosed by fecal examination. Cysts of *Giardia lamblia* were found in a female who had worked in Rumania as a nurse. *Blastocystis hominis* was found by a routine fecal examination of a woman who had worked in a hospital as a cook. The eggs of *M. yokogawai* were found in a boy who had no symptoms. *Clonorchis sinensis* eggs were found in a Chinese woman who had immigrated to Japan.

Consultations involving entomological cases are listed in Table 2. All of these cases were domestic. Tick bites and centipede bites were occurred in people who had worked in forests or fields. A pubic louse, a sexually transmissible insect, was found in a 42-year-old man through prostitution. A case of scabiasis (due to *Sarcoptes scabiei*) occurred in an old man who was an in-patient in a hospital for elderly persons. Fortunately, this infection did not spread to any of the other patients in the hospital. A bethylid wasp (*Sclerodermus nipponicus*) stung a 68-year-old female and caused dermatitis; the wasp was sent by the clinic that administered medical treatment.

Besides these patient consultations, we have received samples

Table 2. List of arthropods reported to the Department of Medical Zoology, Jichi Medical School, Japan (January 1996 - December 2000)

Common Name (Scientific Name)	No.of Cases	Japanese		Alien	Place of Infection
		Domestic	Imported		
tick	2	2			Tochigi, Shizuoka
centipede	2	2			Tochigi, Hyogo
pubic louse (*Pthirus pubis*)	1	1			Hokkaido
crusted scabies (*Sarcoptes scabiei*)	1	1			Tochigi
bethylid wasp (*Sclerodermus nipponicus*)	1	1			Gifu
Total	7	7	0	0	

of bees (*Vespa simillima xanthoptera*), mosquitoes (*An. sinensis*), chironomid larva, fly larva (*Sarcophaga* spp.), ticks, mites (*Balaustium* spp.), earthworms, rice weevil (*Tribolium* spp.), and other such insect samples. These insects are not listed in Table 2 because they did not cause injury.

REFERENCES

1. Yamane, Y., Kamo, H., Bylund, G. and Wikgren, Bo-J. P. (1986): *Diphyllobothrium nihonkaiense* sp. nov. (Cestoda: Diphyllobothriidae)-revised identification of Japanese broad tapeworm. Shimane J. Med. Sci., 10, 29-48.
2. Morishita, K. (1972): Studies on epidemiological aspects of ascariasis in Japan and based knowledge concerning its control. p.1-153. *In* Morishita, K., Komiya, Y. and Matsubayashi, H. (eds.), Progress of Medical Parasitology in Japan, vol. 4. Meguro Parasitological Museum, Tokyo.
3. Eguchi, S. (1973): *Diphyllobothrinus latum* (Linneus, 1758). p.125-144. *In* Morishita, K., Komiya, Y. and Matsubayashi, H. (eds.), Progress of Medical Parasitology in Japan, vol. 5. Meguro Parasitological Museum, Tokyo.
4. Dubinsky, P., Akao, N., Reiterova, K. and Konakova, G. (2000): Comparison of the sensitive screening kit with two ELISA sets for detection of anti-Toxocara antibodies. Southeast Asian J. Trop. Med. Public Health, 31, 394-398.
5. Sakai, R., Kawashima, H., Shibui, H., Kamata, K., Kambara, C. and Matsuoka, H. (1998): *Toxocara cati*-induced ocular toxocariasis. Arch. Ophthalmol., 116, 1686-1687.
6. Toma, T., Miyagi, I., Malenganisho, W. L. M. and Tamashiro, M. (1998): Insecticide susceptibility of *Anopheles minimus*, *An. saperoi* and *An. sinensis* larvae (Diptera: Culicidae) in Okinawa Prefecture, Japan, in 1993 and 1994. Med. Entomol. Zool., 49, 227-230.
7. Matsuoka, H., Yamamoto, S., Chinzei, Y., Ando, K., Arakawa, R., Kamimura, K., Syafruddin, Kawamoto, F. and Ishii, A. (1992): Cyclical transmission of *Plasmodium berghei* (Coccidiida: Plasmodiidae) by *Anopheles omorii* (Diptera: Culicidae). J. Med. Entomol., 29, 343-345.
8. Ree, H. (2000): Unstable vivax malaria in Korea. Korean J. Parasitol., 38, 119-138.