

RECENT TRENDS OF PARAGONIMIASIS WESTERMANI IN MIYAZAKI PREFECTURE, JAPAN

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Abstract. Miyazaki Prefecture has long been known as one of the endemic areas of paragonimiasis westermani. The prevalence of this disease peaked around 1956 and then drastically decreased. A few sporadic cases are still occasionally found in Miyazaki Prefecture; however, the number of new cases has gradually increased during the last 5 years. One important point to be noted is the change of clinical manifestations in the patients. A classically known form of paragonimiasis westermani is characterized by persisting cough, bloody sputum, and nodular or ring shadows in the lung field by chest x-ray. However, the patients recently found in Miyazaki Prefecture rarely showed such typical symptoms. Only four of 13 cases were found to have pulmonary infiltration and nine cases showed massive pleural effusion without pulmonary infiltration. Such atypical cases may be caused by low intensity of infection or, alternatively, be due to the earlier diagnosis.

INTRODUCTION

Miyazaki Prefecture is located in the southwestern part of Kyushu Island, Japan, and has long been known as one of the endemic areas of paragonimiasis westermani in Japan (Yokogawa, 1960). The inhabitants of Miyazaki Prefecture have a custom of eating freshwater crabs, *Eriocheir japonicus*, a famous second intermediate host of *Paragonimus westermani* (Yokogawa, 1952), or the flesh of wild boars, *Sus scrofa leukomistax*, a proven paratenic host (Miyazaki and Hirose, 1976). Although the presence of this disease in Miyazaki Prefecture was known in the late 1860s, an official survey was conducted from 1956 when more than ten cases were found concentrated in junior high-school children in Ikime Village, close to Miyazaki City. After a confirmation of these cases as paragonimiasis westermani, the local government funded the Paragonimiasis Control Committee to conduct the survey in Miyazaki Prefecture. Using a combination of chest x-ray examination, stool examination, and skin test, more than 300 confirmed cases of paragonimiasis westermani were found from the central to the southern part of Miyazaki Prefecture (Fig 1; Hayashi, 1978). After an extensive survey and treatment by the Committee, the occurrence of new cases rapidly decreased within 10 years and eventually the Committee ceased its activity. Since then, an official survey or official record of

paragonimiasis cases in Miyazaki Prefecture has never been reported except for the few case studies related to the difficulties of diagnosis (Tomita *et al*, 1979; Matsuoka *et al*, 1986). Recently, I have been consulted for immunoserological diagnosis of paragonimiasis suspected cases and the

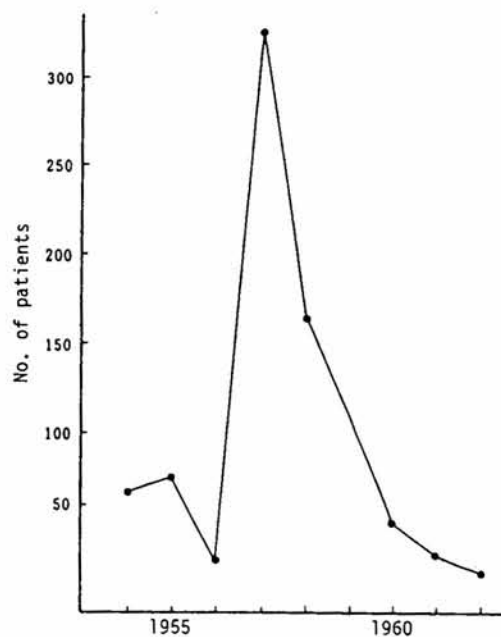


Fig 1—Past endemic of paragonimiasis westermani in Miyazaki Prefecture.

PARAGONIMIASIS WESTERMANI IN MIYAZAKI

Table 1

No.	Date	Patient			Chest x-ray*			Eosinophilia	Remarks
					PT	PE	PI		
1	85. 9	SK	51	F	+	+	-	52%	
2	87.10	ME	?	M	-	-	+	ND	
3	88. 4	AW	26	F	-	+	+	15%	
4	88. 4	KI	9	F	+	+	-	8%	
5	89. 2	YT	11	F	+	+	-	21%	
6	89. 2	KY	44	M	-	+	-	8%	
7	89. 7	YK	56	F	-	-	-	26%	Skin lesion
8	89. 8	KN	65	M	-	-	+	ND	Egg (+) in sputum
9	90. 1	KY	31	M	-	+	-	ND	Egg (+) in PE
10	90. 2	TF	39	F	-	+	+	32%	
11	90. 3	KE	38	M	-	+	-	10%	
12	90. 5	SS	53	M	-	+	-	ND	
13	90. 7	YO	73	M	-	-	+	1%	

*: PT: Pneumothorax, PE: Pleural effusion, PI: Pulmonary infiltration
 ND: not determined

majority of them were actually proven to be paragonimiasis westermani. The following is a brief summary of the cases experienced within the last 6 years and some characteristics of cases of paragonimiasis in Miyazaki Prefecture.

CASE REPORT

During 1985-1990, a total of 13 cases were diagnosed as paragonimiasis westermani (Table 1). As shown in Table 1, only one case each was found in 1985 and 1987. Then, two cases were noted in 1988, four new cases in 1989 and already five cases were recorded in 1990. The patients were concentrated along Oyodo River and Hiroto River (Fig 2), both of which have been endemic areas since ancient times. Among these 13 cases, the most common clinical manifestation was pleural effusion (9/13). Pulmonary infiltration with nodular or ring shadows by chest x-ray, which is known as a typical classical form of paragonimiasis westermani, was noticed only in 5 cases. Interestingly, two cases having massive pleural effusion associated with pneumothorax were both young girls (Ichiki *et al*, 1989). Parasite eggs were detected only in two cases, one case (No. 8)



Fig 2—Distribution of new cases in Miyazaki Prefecture.

in the sputum by bronchofiberscopy and one case (No. 9) in the pleural effusion. One case (case No. 7) was a cutaneous paragonimiasis which was initially diagnosed as gnathostomiasis because of a mobile swelling on the abdominal wall. In this cutaneous paragonimiasis case, a living immature *P. westermani* worm was dissected out from the biopsied tissue (Ogata *et al*, 1990).

DISCUSSION

The results reported here clearly show that the natural life cycle of *P. westermani* is still well preserved in Miyazaki Prefecture even after an extensive survey and mass treatment over a long period. In fact, recently we carried out a preliminary survey and found that freshwater crabs, *E. japonicus*, caught in the Hiroto River were still contaminated with the metacercariae of *P. westermani*, though the rate of infection was less than 1% (Nawa *et al*, unpublished data). According to Yokogawa (1960), the percentage of infected crabs was nearly 100% in Miyazaki Prefecture in 1959. Such a drastic decrease in the intensity of infection in the second-intermediate host seems to be profoundly related to the alteration of clinical manifestations in the patients. As pointed out by Yokogawa (1960), pulmonary infiltration with worm cyst formation requires an infection with plural parasites. Low density of metacercariae in the crabs may often cause single worm infection so that the majority of patients showed pleural effusion without pulmonary infiltration.

From the present results, we should be reminded that it is extremely difficult to change

the traditional custom of food sources and cooking style. Therefore, we should learn that new epidemics could easily occur if the inhabitants in the endemic area remain unaware of the risk of infection.

REFERENCES

- Hayashi E. A study on paragonimiasis. In: Tashiro I, ed. Medical History of Miyazaki Prefecture. Doctor Association, 1978; 1627-80 (In Jpn).
- Ichiki M, Suzumiya H, Hayakawa K, Imai J, Nawa Y. Two cases of paragonimiasis westermani with pleural effusion in young girls living in the southern part of Miyazaki Prefecture, Japan. *Jpn J Parasitol* 1989; 38 : 392-5.
- Matsuoka H, Shioiri S, Nakashima T, Tachibana N, Tsuda K. A case of paragonimiasis westermani accompanying pleural effusion. *Jpn J Chest Dis* 1986; 45 : 428-33. (Jpn with Eng Abstr).
- Miyazaki I, Hirose H. Immature lung flukes first found in the muscle of the wild boar in Japan. *J Parasitol* 1976; 62 : 836-7.
- Ogata K, Miyagi T, Inoue S, Imai J, Nawa Y. Cutaneous paragonimiasis: A case report. *Jpn J Parasitol* 1990; 39 : 63-6.
- Tomita M, Koga Y, Shibata K, *et al*. T, K. A case with paragonimiasis simulating lung cancer clinically. *Jpn J Chest Dis* 1979; 38 : 652-7. (Jpn with Eng Abstr).
- Yokogawa M. Epidemiology of *Paragonimus*: route of infection and geographic distribution in Japan. *J Public Health Practice* 1952; 11 : 19-25 (In Jpn).
- Yokogawa M. *Paragonimus* and paragonimiasis. *Progr Med Parasitol Jpn* 1960; 1 : 130-99.