

□Brief Communication□

Metacercarial infections of *Paragonimus westermani* in freshwater crabs sold in markets in Seoul

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Abstract: Status of metacercarial infections of *Paragonimus westermani* was observed in freshwater crabs, which were purchased at 3 markets in its peak season of 1990. All of 85 crabs were *Eriocheir japonicus*. No other species of *Eriocheir* were found. When crushed muscle and viscera was examined individually, the infection rate was 11.8%; and mean number of metacercariae was 2.1 per infected crab. Unless adequately cooked, freshwater crabs are still potential sources of human paragonimiasis.

Key words: *Paragonimus westermani*, metacercaria, intermediate host, *Eriocheir japonicus*, freshwater crab

Since the early 1970s pesticides began to be widely used for cultivating staple crop in Korea. This innovation of agriculture changed the ecology of rice paddy where freshwater crabs of genus *Eriocheir* thrived in. The crabs lost their main habitat of rice paddy (Kim, 1973). Their population were further reduced because their habitat in freshwater ecosystem became polluted. Consequently, reduced production of the crabs decreased incidence of human paragonimiasis. Dramatic reduction of patients made physicians place paragonimiasis at low priority in diagnosis of bronchopulmonary diseases.

Because the traditional soybean-sauce soaked freshwater crab (kejang) continued to be a favorite appetizer in a limited group of families, however, occurrence of patients have been continued. Using the antibody test by ELISA as a diagnostic tool, a total of 105 patients of human paragonimiasis was found in a university hospital in 10 years (1979~1988) (Lee *et al.*, 1989).

About half of the patients remembered the eating of the kejang. Familial infection is common in paragonimiasis (Sung *et al.*, 1989).

In Korea, metacercarial infections of crayfish (*Cambaroides similis*) have been reported frequently to evaluate local endemicity of paragonimiasis. But its significance as a source of human infection seems negligible nowadays because crayfish juice is no longer used as a medicine for measles. Despite the practical importance of the freshwater crabs as a source of human infection, there have been few reports on the metacercarial infections in crabs. Kang *et al.* (1964) and Kim (1969) described that 70~90% of freshwater crabs in Cheju Do were infected with average metacercarial burden of 8~31/infected crab. No more information are available on the infection in this crustacean host. To evaluate the current status of metacercarial infection in freshwater crabs, we examined them in autumn, 1990.

As shown in Table 1, we purchased 85 freshwater crabs at 3 major traditional markets in Seoul. Crabs were not chosen. After weighing the crabs, they were individually crushed in a

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Table 1. Results of examination for *Paragonimus* metacercariae in 85 *Eriocheir japonicus* sold in markets in 1990

Date of exam.	Code of market*	No. examined	Origin of crabs**	No. of inf. crabs	No. metacer. in infected crabs
Sep. 15	1	7	Samchuk (Kangwon)	3	1, 3, 5
Sep. 19	1	11	Nonsan (Chungnam)	0	(—)
Oct. 7	2	30	Paju (Kyunggi)	4	1, 1, 2, 3
Oct. 15	3	10	Paju (Kyunggi)	0	(—)
Nov. 16	3	17	Paju (Kyunggi)	3	1, 1, 3
Dec. 19	3	10	Paju (Kyunggi)	0	(—)

*Markets 1: Dongdaemoon market 2: Kyungdong market 3: Namdaemoon market

**As stated by each merchant

mortar; and communitid muscle and viscera were filtered through 2 layers of gauze 3 times with physiologic saline. Sediment was examined under a dissecting microscope.

The infection rate was 11.8% (10/85). Metacercarial burden was 1~5 in an infected crab. Of 10 infected crabs, 5 were infected with a metacercaria, 1 with 2 metacercariae, 3 with 3 metacercariae and 1 with 5 metacercariae. By weight, 5 (11.6%) of 43 crabs of under 50g, 4 (12.7%) of 31 crabs of 51~100g and 1 (9.1%) of 11 crabs of over 101g were infected.

The examined crabs were *Eriocheir japonicus* without an exception. Many *E. sinensis* were expected when merchants informed that the crabs were originated from Paju or Nonsan which were known localities of the species. In Korea, *E. sinensis*, *E. leptognathus* and *E. rectus* have been described to distribute in rivers drained to Yellow Sea, while *E. japonicus* distributes in rivers drained to East and South Sea and in brooks in Cheju Do (Kim, 1973). We think it necessary to confirm whether geographical distribution of freshwater crabs by species has changed nowadays.

The present results of metacercarial infection are hardly comparable because we can not trace previous data in similar samples. When compared with data collected in the 1960s at then hyperendemic Cheju Do (Kim, 1969) the present data shows evidently lowered infections. Though the

infection rate and burden look low, freshwater crabs sold in markets in Seoul are still hazardous source of human infection. We think it necessary to monitor the status of metacercarial infection in freshwater crabs.

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≡국문초록≡

서울시내 시판 동남참게의 폐흡충 피낭유충 감염상

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폐흡충증은 우리나라에서 아직도 중요한 기생충질환으로서 서울의 한 대학병원에서 지난 10년간 105례가 발견되는 등 감염이 계속 발생하고 있으며 이 환자중 시장에서 민물게를 구입하여 게장을 담궈 먹은 과거력이 54%에서 증명되었다. 이 관습은 일부 가정에 남아 있으므로 폐흡충증은 가족단위로 발생하는 경향을 보이고 있다. 민물게장이 폐흡충증의 중요 원인임에도 불구하고 민물게의 피낭유충 감염상태에 대한 조사결과는 대단히 적다. 따라서 1990년 9월부터 12월까지 서울의 시장에서 동남참게 85마리를 구입하고 폐흡충 피낭유충 감염상태를 조사하였다. 그 결과는 다음과 같다.

1. 구입한 민물게는 분류상 모두 동남참게(*Eriocheir japonicus*)이었고 참게(*E. sinensis*)는 없었다. 종별 분포에 대한 현지조사가 필요하다고 생각한다.
2. 참게를 파쇄(破碎), 3회 세척 여과하고, 침전물을 해부현미경으로 관찰한 결과 감염율은 11.8%이었고 평균 감염 충체수는 2.1개이었다.
3. 참게 무게별 감염율은 50g 이하 43마리중 11.6%, 51~100g 31마리중 12.7%, 101g이상 11마리중 9.1%이었다.

전국 각지에서 서울로 모아 판매하는 참게는 아직도 사람의 폐흡충 감염원이라고 판단하였다.

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