

## One human case of natural infection by *Heterophyopsis continua* and three other species of intestinal trematodes

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**Abstract:** The third human case of natural infection by *Heterophyopsis continua* in Korea was found in Chinju, Kyongsangnam-do. The case was a 53-year-old man. He used to eat raw brackish and fresh water fish. After praziquantel treatment and purgation, *H. continua* were collected from the diarrheal stool together with *Metagonimus yokogawai*, *Heterophyes nocens* and *Echinostoma hortense*. His clinical complaints were indigestion, epigastric discomfort, poor appetite and fatigue. The complaints were considered rather due to heavy *M. yokogawai* infection.

**Key words:** *Heterophyopsis continua*, *Heterophyes nocens*, *Echinostoma hortense*, *Metagonimus yokogawai*, human infection

Of the family Heterophyidae, 10 species were reported to infect human in Korea and *Metagonimus yokogawai* is the most prevalent one (Chai and Lee, 1990). Many Korean people are infected by intestinal trematodes through eating raw flesh of the brackish and/or fresh water fish. Most of them were multi-infected by more than one species of trematodes. They complained gastrointestinal troubles such as abdominal pain, indigestion, diarrhea, fatigue or general weakness (Seo *et al.*, 1984).

*Heterophyopsis continua* belonging to the family Heterophyidae is a minute intestinal trematode infecting fish-eating birds and mammals including human. Brackish water fish such as the perch (*Lateolabrax japonicus*), the goby (*Acanthogobius flavimanus*), and *Clupanodon punctatus* were reported as the second intermediate hosts of *H. continua* in Korea (Chun, 1960; Seo *et al.*, 1984; Sohn *et al.*, 1994). The natural or experimental

definitive hosts of *H. continua* are cats (Eom *et al.*, 1985), dogs (Chun, 1960; Seo *et al.*, 1984), and chicks (Hong *et al.*, 1990).

Two human cases of natural infection by *H. continua* were recorded in Korea (Seo *et al.*, 1984). We found a man infected by *H. continua* and report here this case as the third human infection by *H. continua* in Korea.

On 26 June, 1989, Kho, Y.J., 53-year-old man who had lived in Chinju, Kyongsangnam-do, visited the Gyeongsang University Hospital with complaints of poor appetite, fatigue, general weakness, epigastric discomfort and indigestion. On physical examination, the sclera was found to be slightly icteric and multiple collateral circulations over abdomen. He said to have eaten raw flesh of fresh and brackish water fish for more than ten years. Eggs of *Clonorchis sinensis*, *Echinostoma hortense* and *M. yokogawai* were found in stool examination using formalin-ether sedimentation technique. Number of eggs per gram of feces (EPG) of *C. sinensis* was 8,250 and EPG of *M. yokogawai* was 1,350. On 30

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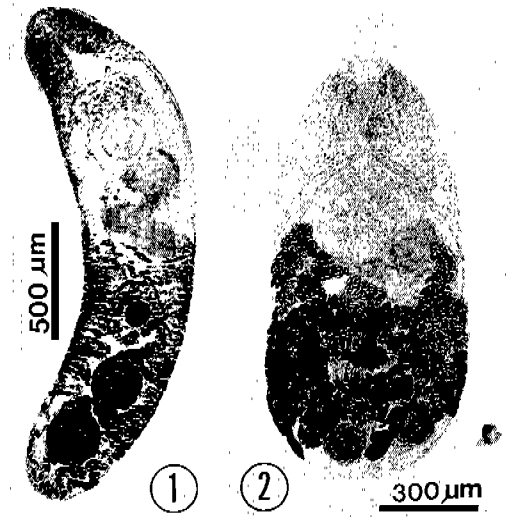
June, 1989, he was treated with praziquantel (Distocide®) 10 mg/kg in a single dose and purgated with magnesium sulfate. Flukes collected from the diarrheal stool were identified to be 2 *H. continua*, 12 *Heterophyes nocens*, 2,329 *M. yokogawai* and 2 *E. hortense*. On 1 July, 1989, he was treated with praziquantel at three doses of 25 mg/kg for *C. sinensis* infection.

*H. continua* was elongated leaf-like, 1.425-2.108 mm long and 0.395-0.590 mm wide (Fig. 1). Oral sucker subterminal. Intestinal ceca extended to posterior end of the body. Ventral sucker 0.169-0.200 mm in diameter at anterior one-fourth of the body. Genital sucker, 0.122-0.176 mm in diameter and posterosinistral to ventral sucker. On gonotyl, 93-105 rodlets were arranged in a single circle. Seminal vesicle 'L'-shaped between ventral sucker and ovary. Ovary 0.065-0.115 mm in diameter. Two testes globular and obliquely tandem. Anterior testis 0.127-0.222 mm and posterior testis 0.109-0.239 mm in diameter.

*H. continua* collected from this case were identified by morphological characters such as elongated leaf-like body, relation of ventral and genital suckers, number and arrangement of rodlets on the gonotyl (Hong *et al.*, 1990). *H. nocens* (Fig. 2) of this case, which have 50-61 (55 in average) chitinous rodlets on the gonotyl, were morphologically compatible with the description given by Chai *et al.* (1994a).

It is expected that there be a large number of *H. continua*-infected cases in Korea because many Korean adults enjoy eating raw flesh of brackish water fish. However, only two cases are reported (Seo *et al.*, 1984). Small amount of daily egg production of *H. continua* can explain the small number of the reported cases. The uneasiness of differentiation between heterophyid eggs by stool examination might be another reason. In this case, *H. continua* egg was not detected in stool examination but 2 *H. continua* were collected among 2,329 *M. yokogawai* after praziquantel treatment. It is encouraged that more attention be paid to differentiate the heterophyid eggs from the *Metagonimus* eggs during routine stool examinations.

Clinical symptoms of this case were considered necessarily not due to *H. continua*



**Fig. 1.** *Heterophyopsis continua* shows 'L'-shaped seminal vesicle and intrauterine eggs. Acetocarmine stained. **Fig. 2.** *Heterophyes nocens* shows a right intestinal cecum not exceeding right testis. Acetocarmine stained.

because a very small number of *H. continua* was mixed with a large number of *M. yokogawai* (Chai *et al.*, 1985). Gastrointestinal troubles such as abdominal pain, diarrhea or indigestion seems rather due to the chronic infection of 2,300 *M. yokogawai* (Seo *et al.*, 1971). Epigastric pain could be caused by *E. hortense* (Chai *et al.*, 1994b). Other symptoms of this case were subsided after *C. sinensis* treatment with praziquantel. In clinical practices, infection of intestinal trematodes is not usually listed in diagnosis of gastrointestinal troubles and thus most of the cases are missed from the specific diagnosis.

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=초록=

## 긴이형흡충과 여러 종의 장흡충에 혼합감염된 인체감염 1례

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긴이형흡충(*Heterophyopsis continua*)에 의한 인체감염 1례를 보고한다. 이 사람은 53세 남자로 경상남도 진주시에 거주하였으며, 수년 동안 반염수어와 민물고기를 즐겨 생식했다고 하였다. 대변 검사에서 간흡충, 요코가와흡충, 극구흡충의 충란이 검출되어 이 사람에게 praziquantel을 투여하였다. 치료 후 설사변에서 긴이형흡충 2마리, 유태이형흡충 12마리, 요코가와흡충 2,329마리와 호르텐스극구흡충 2마리를 수집하였다. 이 사람의 임상증상은 소화불량, 상복부불쾌감, 식욕부진, 피로감 등이었다. 이 증상은 소수의 긴이형흡충, 유태이형흡충과 호르텐스극구흡충 감염보다는 많은 수의 요코가와흡충 감염에 의한 것으로 해석되었다. 이 증례는 문헌상 긴이형흡충 인체감염례의 국내 제3례에 해당된다.

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