

A case of echinostomiasis with ulcerative lesions in the duodenum

Jong-Yil Chai^{1)*}, Sung-Tae Hong¹⁾, Soon-Hyung Lee¹⁾,
Geun Chan Lee²⁾ and Young Il Min²⁾

Department of Parasitology and Institute of Endemic Diseases¹⁾, Seoul National University
College of Medicine, Seoul 110-799; Department of Internal Medicine²⁾, University of Ulsan
College of Medicine, Seoul 138-040, Korea

Abstract: Echinostomiasis is an endemic intestinal trematodiasis of humans in Korea. We observed a human case of *Echinostoma hortense* infection who had ulcerations on the duodenal mucosa. A 55-year old man living in Hamyang-gun, Kyongnam, complained of epigastric pain with hematemesis in April 1994. Endoscopy revealed lesions of early gastric cancer and duodenal ulcerations. A penetrating parasite into the duodenal mucosa was picked out, and identified as *E. hortense*. As the patient was treated with praziquantel 10 mg/kg single dose, 3 more *E. hortense* and 7 *Metagonimus* worms were recovered. This case demonstrates that echinostomiasis causes gross ulcerations in the duodenum.

Key words: *Echinostoma hortense*, duodenum, ulcerative lesions, *Metagonimus*

INTRODUCTION

The intestinal flukes of the family Echinostomatidae are known to distribute in Korea. *Echinostoma hortense* is dominant (Seo *et al.*, 1983; Ryang *et al.*, 1985; Lee *et al.*, 1986; Hong, 1986; Lee *et al.*, 1988b), but *E. cinetorchis* (Seo *et al.*, 1980; Ryang *et al.*, 1986; Lee *et al.*, 1988a) and *Echinochasmus japonicus* (Seo *et al.*, 1985) are also recorded from humans. Endemic transmission of *E. hortense* was recovered in Chongsong-gun (Lee *et al.*, 1988b) and Umsong-gun (We, 1987).

Intestinal lesions in experimental rats infected with *E. hortense* were blunting, fusion or focal loss of the villi, hyperplasia of the crypt, proliferation of goblet cells, infiltration of inflammatory cells in the stroma, capillary

congestion, dilatation of lymphatics, and increased fibroblasts. The villous atrophy began one day after infection and progressed worse after then (Lee *et al.*, 1990).

The same atrophic changes were also noticed in infections of *E. caproni* (referred to as *E. revolutum* by Bindseil and Christensen, 1984; Kim and Fried, 1989; Simonsen *et al.*, 1989) and *E. trivolvis* (referred to as *E. revolutum* by Huffman *et al.*, 1986). Huffman *et al.* (1986) observed that the intestine of hamsters infected by *E. trivolvis* was markedly dilated and the muscle layer in the submucosa became hypertrophic. They also recorded that infected animals showed weight loss and some of them were with livers that were invaded by the worm and its eggs. The chicks infected with *E. caproni* showed similar distension of the intestine (Kim and Fried, 1989). It was demonstrated that the fluke pinched the villi with its suckers (Lee *et al.*, 1990). The pinched site protruded like a nipple-like plug with circular dimpling made by rim of the sucker,

• Received July 9 1994, accepted after revision August 4 1994.

* Corresponding author

but the protrusion rapidly disappeared 1 to 2 minutes after removal of the worms (Simonsen *et al.*, 1989; Gavet and Fried, 1994).

The infected cases with *E. hortense* complained of non-specific gastrointestinal symptoms such as abdominal pain (epigastric and/or lower abdominal), diarrhea, and anorexia (Lee *et al.*, 1986). Eosinophilia is also associated in heavily infected cases (Lee *et al.*, 1988b). When the imported *Echinostoma* gastroenteritis occurred in U.S.A., 19 of 20 group travellers passed echinostome eggs and they complained of flatulence, abdominal discomfort, abdominal cramps, loose or watery stools, postprandial burning and epigastric pain (Poland *et al.*, 1985).

The present paper describes a case of *E. hortense* infection in Korea. The patient is a 55-years old Korean man, living at Pyonggokmyon Hamyang-gun, Kyongnam. The patient was admitted to the Department of Internal Medicine, Asan Medical Center, University of Ulsan on 4 April 1994, complaining of epigastric pain and hematemesis. He was healthy until the sudden onset of the symptoms one week before the admission. After then hunger pain and melena progressed, but the symptoms were relieved transiently by medication at a private clinic.

Physical examination at admission revealed normal findings except for mild epigastric

tenderness. His past medical history was not contributory. Laboratory data showed a mild degree of anemia (Hb 7.3 g/dl and Hct 21.2%), and others were normal. He had enjoyed eating various raw freshwater fish near the Chirisan (Mt.).

Gastroduodenal fiberscopy recognized an ulceration spot at the posterior highbody wall of the stomach. The lesion was not bleeding. The surrounding mucosa was found conversed and fused. The gastric lesion was diagnosed as stage IIc or III of early gastric cancer. Biopsy was done. In the duodenum, 3 spots of mucosal ulcerations were observed. A living worm was penetrating into one of the ulcers (Fig. 1). Posterior half of its body was moving freely in the lumen. It was picked out with the fiberscope forceps.

Histopathological examination proved the stomach lesion as adenocarcinoma. Total gastrectomy was done. The worm recovered from his duodenum was morphologically identified as *E. hortense* (Figs. 2 & 3). Treatment with 600 mg praziquantel (Distocide®, Shinpoong Pharmaceutical Co., Korea) expelled 3 more *E. hortense* and 7 Miyata type *Metagonimus* (Chai *et al.*, 1993) (Fig. 4).

The present symptoms might have been directly induced by early gastric carcinoma though it is not clear. However, the ulcerative

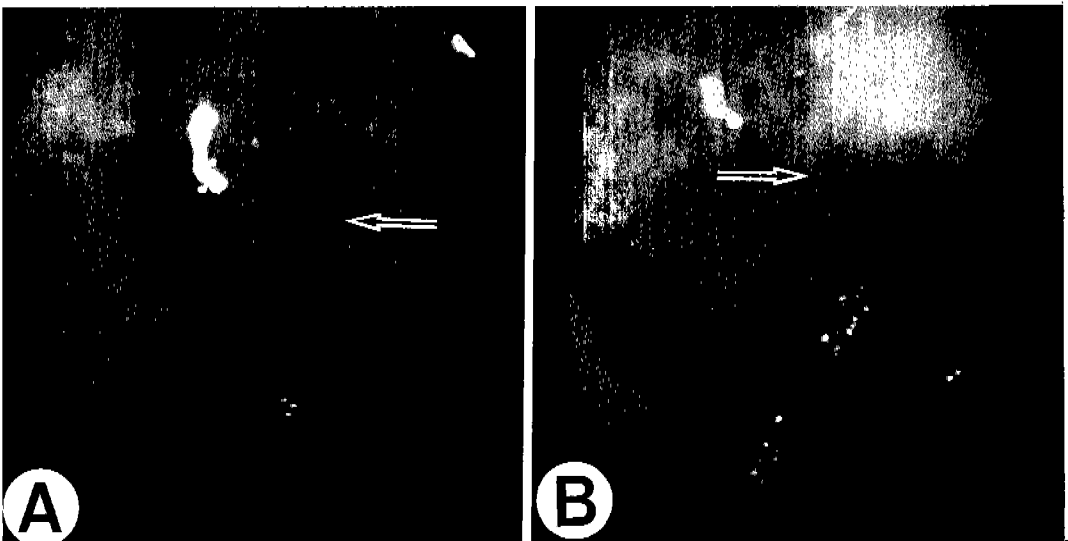


Fig. 1. Fiberendoscopic views of the duodenum wall posterior to the bulb. **A.** A moving worm (arrow) is penetrating into the wall. **B.** The mucosal surface is obviously ulcerated after removal of the worm (arrow). Two nearby ulcers are of same nature.

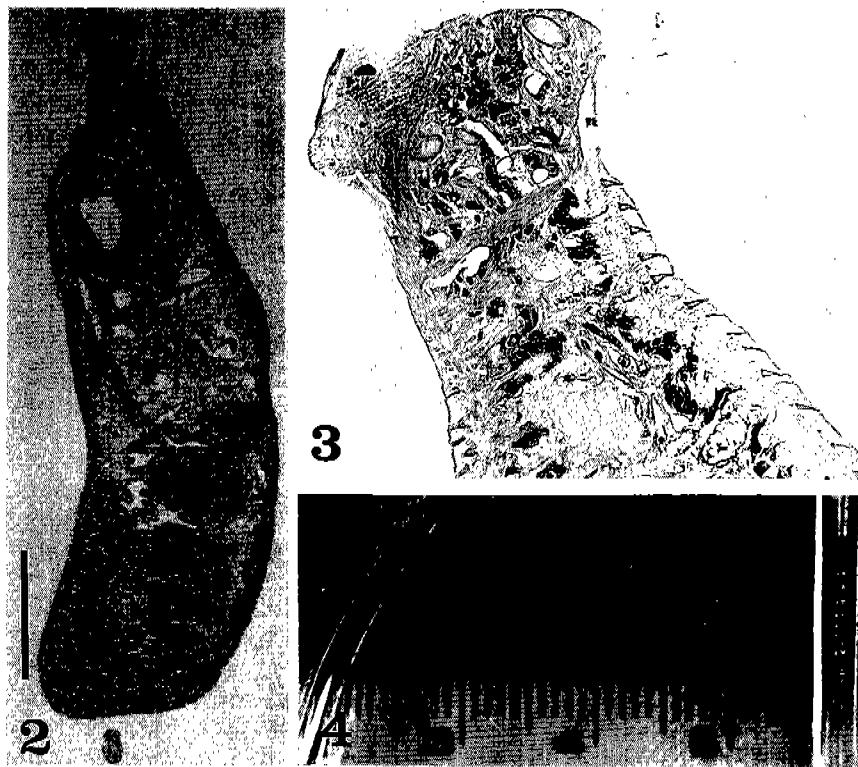


Fig. 2. The worm removed from the duodenum by fiberscopy was identified as *E. hortense*. The worm was sectioned sagittally, showing head crown, large ventral sucker, uterine loop, ovary at equatorial dorsum, two testes at posterior body half, and vitelline follicles at ventral posterior body. Bar, 1 mm. **Fig. 3.** Magnified anterior end of the sectioned worm. The head crown (arrow) with collar spines (arrow heads) is well-developed, and tegumental spines are obvious. **Fig. 4.** Three more *E. hortense* and 7 *Metagonimus*, Miyata type, were recovered from the case after praziquantel treatment. Gross view.

lesions in the duodenum were evidently made by *E. hortense*. The lesions looked well progressed to induce bleeding and hunger pain. In endoscopy, the anterior half of the fluke was penetrating into the mucosa of the duodenum. Two nearby ulcers were of the same nature (Fig. 1), and seemed to be made by the worm.

This record may be the first description demonstrating ulcerative lesions of the duodenum in echinostomiasis. Together with known pathological lesions, the intestinal ulceration explains the known gastrointestinal symptoms of echinostomiasis very well. The mucosal defect made by the worm may cause luminal bleeding, and be a focus of secondary bacterial infection. Also the ulcer can be a route of the worm or eggs spreading into the submucosa or extraintestinal location. How does it make ulcerative lesions may be the

subject of further researches.

REFERENCES

- Bindseil E, Christensen NOE (1984) Thymus-independent crypt hyperplasia and villous atrophy in the small intestine of mice infected with the trematode *Echinostoma revolutum*. *Parasitology* **88**: 431-438.
- Chai JY, Huh S, Yu JR, et al. (1993) An epidemiologic study of metagonimiasis along the upper reaches of the Namhan River. *Korean J Parasit* **31**(2): 99-108.
- Gavet MF, Fried B (1994) Infectivity, growth, distribution and acetabular attachment of a one-hundred metacercarial cyst inoculum of *Echinostoma trivolvis* in ICR mice. *J Helminthol* **68**: 131-134
- Huffman JE, Michos C, Fried B (1986) Clinical and pathological effects of *Echinostoma*

revolutum (Digenea: Echinostomatidae) in the golden hamster, *Mesocricetus auratus*. *Parasitology* **93**: 505-515.

Kim S, Fried B (1989) Pathological effects of *Echinostoma caproni* (Trematoda) in the domestic duck. *J Helminthol* **63**: 227-230.

Lee SH, Noh TY, Sohn WM, Kho WG, Hong ST, Chai JY (1990) Chronological observation of intestinal lesions of rats experimentally infected with *Echinostoma hortense*. *Korean J Parasit* **28**(1): 45-52.

Lee SK, Chung NS, Ko IH, Ko HI, Chai JY (1986) Two cases of natural human infection by *Echinostoma hortense*. *Korean J Parasit* **24**(1): 77-81.

Lee SK, Chung NS, Ko IH, Ko HI, Sohn WM (1988a) A case of natural human infection by *Echinostoma cinetorchis*. *Korean J Parasit* **26**(1): 61-64.

Lee SK, Chung NS, Ko IH, et al. (1988b) An epidemiological survey of *Echinostoma hortense* infection in Chongsong-gun, Kyongbuk Province. *Korean J Parasit* **26**(2): 199-206.

Poland GA, Navin TR, Sarosi GA (1985) Outbreak of parasitic gastroenteritis among travelers returning from Africa. *Arch Intern Med* **145**: 2220-2221.

Ryang YS (1990) Studies on *Echinostoma* spp. in the Chungju Reservoir and upper streams of the Namhan River. *Korean J Parasit* **28**(4): 221-233.

Ryang YS, Ahn YK, Kim WT, Shin KC, Lee KW, Kim TS (1986) Two cases of human infection by *Echinostoma cinetorchis*. *Korean J Parasit* **24**(1): 71-76.

Seo BS, Cho SY, Chai JY (1983) Studies on intestinal trematodes in Korea I. A human case of *Echinostoma cinetorchis* infection with an epidemiological investigation. *Seoul J Med* **21**(1): 21-29.

Seo BS, Hong ST, Chai JY, Lee SH (1983) Studies on intestinal trematodes in Korea VIII. A human case of *Echinostoma hortense* infection. *Korean J Parasit* **21**(2): 219-223.

Seo BS, Lee SH, Chai JY, Hong SJ (1985c) Studies on intestinal trematodes in Korea XX. Four cases of natural human infection by *Echinochasmus japonicus*. *Korean J Parasit* **23**(2): 214-220.

Simonsen PE, Bindseil E, Koeie M (1989) *Echinostoma caproni* in mice: Studies on the attachment site of an intestinal trematode. *Intern J Parasitol* **19**(5): 561-566.

We JS (1987) Prevalence of intestinal helminthiases in some residents at Umsong-gun, Chungchongbuk-do, and detection of metacercariae from fresh water fish. Dfssertation for Master of Science (MSc) in Medicine, Seoul National Unviersity.

= 국문초록 =

십이지장 궤양을 동반한 호르텐스극구흡충 감염증례

서울대학교 의과대학 기생충학교실¹⁾ 및 풍토병연구소, 울산대학교 의과대학 내과학교실²⁾

채종일¹⁾, 홍성태¹⁾, 이순형¹⁾, 이근찬²⁾, 민영일²⁾

상복부 통증과 토혈을 주소로 내원한 55세 한국인 남자 환자를 내시경으로 검사한 결과 위와 십이지장의 벽에서 궤양을 관찰하였다. 위벽의 궤양은 조기위암으로 확인되어 위절제 수술을 받았다. 십이지장의 병변은 유문부 직후의 뒷벽에 세 개의 궤양이 형성되어 있었고, 그 중 하나에는 움직이는 호르텐스극구흡충이 파고 들고 있었다. 이 충체를 내시경 집게로 꺼내어 표본을 만들어 관찰한 바 호르텐스극구흡충으로 진단하였다. 환자를 프라지판텔로 치료한 후에 충체 수집을 시도하여, 호르텐스극구흡충 3마리와 미야타형 *Metagonimus* 7마리를 더 얻었다. 이 증례를 소장 점막의 궤양을 처음으로 확인한 극구흡충증례로 기록한다.

[기생충학잡지 32(3): 201-204, 1994년 9월]