

## A Human Case of Gallbladder Fascioliasis in Korea

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### INTRODUCTION

*Fasciola* is a common liver fluke of cattle or other herbivorous mammals in the world. It infects the human who ingests the metacercariae through aquatic vegetation. In Korea, its prevalence is high among the cattle (Rhee *et al.*, 1973; Min, 1980), but human fascioliasis has been recorded only in 4 occasions (Cho *et al.*, 1976; Lee *et al.*, 1982; Park *et al.*, 1984; Oh *et al.*, 1984).

The author experienced a patient who suffered from acute cholecystitis with a stone. The surgically removed gallbladder revealed helminthic eggs in the wall, which were identified as those of *Fasciola* sp. The clinical history, pathological and parasitological findings of this case were described.

### CASE RECORD

A 48 year old Korean man was wedmitted to the Yeung Nam University Hospital (YUH) on November 28, 1984, because of abdominal pain. The pain was in the right upper quadrant and was colicky. It had been intermittently occurring in every 2 to 3 days during past 15 days. The pain attack was occasionally severe to disturb sleeping. He denied any associated radiating pain. Any other symptom associated with the pain was not found. As the pain attack repeated, he visited a private clinic of surgery at Chomchon,

Kyongsangbuk-do, where roentgenography was done to be normal. However an ultrasonography showed a stone in his gallbladder. He was persuaded to receive a surgery, and transferred to YUH.

He lived in Makok-ri, Hogyemyon, Munkyonggun, Kyongsangbuk-do. He worked at a Unit Office of the National Agricultural Cooperative Federation. His family history was not contributory.

Physical examination revealed chronically ill appearance and slightly icteric sclera. Head, neck and chest were normal. The liver tip was palpable under the right costal margin, but not tender.

The laboratory data were hemoglobin 15.7mg/100ml, hematocrit 47.3%, WBC 6,300/ $\mu$ l with neutrophil 49%, lymphocyte 34%, monocyte 2% and eosinophil 15%, SGOT 136 IU/l, SGPT 358 IU/l, protein 8.6g%, albumin 4.7g%, A/G ratio 1.2, total bilirubin 1.0mg%, total cholesterol 152mg%, alkaline phosphatase 735IU/l, LDH 558 IU/l, serum glucose 87mg%, BUN 13.0mg%, creatinine 1.1mg%. The hepatitis B (HB) surface antigen was negative, but he was positive for HBs antibody and HBe-antibody. Urinalysis was normal and chest X-ray film was also unremarkable.

He was operated for the gallstone on November 30. The gallbladder was seen 5×6×6cm, with 0.5-0.7cm thick wall, clear bile and a pigmented stone. The cystic duct was dilated 1cm in diameter, and the common bile duct was dilated

to be approximately 15mm in diameter yielding clear bile but no stone. The liver looked normal grossly.

The count of WBC increased 16,800 after the surgery but others remained in normal ranges. T-tube cholangiography showed no disturbance of bile flow on December 8, 1984, the 8th day after the operation. He was discharged on Dec. 11, the 13th day after the admission in good conditions.

### PATHOLOGICAL FINDINGS

Grossly the gall bladder was slightly enlarged. The serosa was shaggy and edematous with many areas of fresh hemorrhage. The wall was generally thickened up to 1.0cm particularly in neck and fundus. The mucosal surface was edematous and lost its normal velvety appearance. It rather showed rough irregular surface with areas of ulceration and hemorrhage. The foci of papillary growth were also observed. Although fibrinous exudate was seen, no parasite was found in the cavity. The entire bladder was sectioned serially in 0.5cm thickness. A focus of submucosal hemorrhage was distinct in serial sections at the area of 4cm from the cystic duct (Fig. 1). Smears of necrotic debris scratched from this hemorrhagic foci revealed several helminth eggs. They were observed parasitologically.

A total of 28 blocks and additional 30 serial sections were made for the microscopical examination. The bladder wall was generally thickened and inflamed transmurally. No area of perforation was observed. However, deeply penetrating ulcerations were seen in many areas (Fig. 2). Ulcerating tunnel-like areas were often filled with fibrin necrotic exudate with hemorrhage in which several degenerative eggs were found. The eggs were ovoid with yellow shell. They were scattered not only in necrotic portions but inside the cystically dilated glands (Fig. 3&4). Myriads of eosinophils were found in these areas, together with plasma cells and lymphocytes. Neutrophils were also seen in small foci and macrophages

were scattered around the necrotic areas. The mucosal epithelium was generally proliferative and there were many areas of glandular hyperplasia mimicking low grade papillary tumor at least in one area. Transmural edema and congestion were particularly prominent throughout the sections. There was no clue of impacted worm structure in any of the entire sections. There was an area of well formed granuloma where degenerated eggs were found in the center.

### PARASITOLOGICAL FINDINGS

Several thin shelled yellowish eggs were observed in the tissue debris scratched from hemorrhagic foci in the submucosa. The shell of the eggs were covered with tissue debris (Fig. 5). The eggs measured 143-155 $\mu$ m long and 64-91 $\mu$ m wide (Table 1). Most of them were slender, and the operculum was identified in an egg. The eggs were immature, yellow and elliptical, but slightly asymmetric. The eggs found in sectioned specimens were distorted with remaining shells.

Although there was no clue of worm in the tissue, the eggs could be identified as those of *Fasciola* sp. by their morphology and measurements.

**Table 1.** Measurements of the eggs from gallbladder wall

	Range( $\mu$ m)	Mean( $\mu$ m)
Length	143-155	148.3
Width	64-91	76.1
Opercular width	30.2	30.2
Opercular depth	6.7	6.7

### DISCUSSION

In Korea, 4 cases of human fascioliasis have been recorded (Cho *et al.*, 1976; Lee *et al.*, 1982; Park *et al.*, 1984; Oh *et al.*, 1984).

The first case was infected by an adult fluke which was picked up by a stone forcep in the distal common bile duct during a gallbladder

**Table 2.** Summary of human fascioliasis cases in Korea

No.	Reporter	Age/sex (Address)	Chief complaint	Pre-op. diagnosis	Clinical findings	Definite diagnosis	Infection source
1	Cho <i>et al.</i> (1976)	42/F in Seoul	Colicky pain at RUQ	Chronic cholecystitis	Repeated pain	Adult worm from distal bile duct	Cattle liver (?)
2	Lee <i>et al.</i> (1982)	19/F in Hongsong	Abdominal pain	Colon cancer	Fever, anorexia, wt loss, mass at RUQ, eosinophilia 23%	Worm section in colon wall	Vegetables
3	Park <i>et al.</i> (1984)	27/F in Seoul	Mass at RLQ	Colon cancer	Epigastric tender- phness, mass of cecum, eosino- philia 22%	Worm section in the mass	
4	Oh <i>et al.</i> (1984)	4/M in Wonju	Abdominal pain	Fascioliasis	Abdominal distention, edema, eosino- philia 25%	Ova from stool, serology	
5	Present (1986)	48/M in Munkyeong	Colicky pain at RUQ	Cholecystitis with a stone	Gall stone, hepatomegaly, eosinophilia 15%	Ova from gall- bladder wall	Vegetables (suspected)

surgery(Cho *et al.*, 1976). The second and the third cases were of ectopic parasitism in the ascending colon. Both cases were surgically explored under the impression of colon cancer. They were diagnosed by sectioned specimens of the adult fluke(Lee *et al.*, 1982; Park *et al.*, 1984). The 4th is a medical case who was diagnosed by stool examination and was treated with bithionol(Oh *et al.*, 1984). Table 2 summarized the cases of human fascioliasis in Korea.

The present case failed to show any adult fluke despite serial sections of the gallbladder. However, tunnel-like destruction of the gallbladder wall was found full of fibrinectrotic tissue. Only the eggs were scattered in or around the necrotic debris in the bladder wall. The eggs, which were collected from scratched material of ulcerated focus, were elliptical but slender. The length ranged 143-155 $\mu$ m and the width 64-91 $\mu$ m. They were operculated, thin-shelled and immature.

The eggs of *Fasciola*, *Fasciolopsis*, *Echinostoma* and *Schistosoma* are over 100 $\mu$ m in length among the human parasitic flukes. However, the eggs of *Schistosoma* are non-operculated, mature and spined. The eggs of *Echinostoma* and *Fasciolopsis* are closely similar to that of *Fasciola* sp. Therefore differentiation of such eggs is not easy especially when they are found in stool. However, both of the flukes are parasitic in the

intestine, and their infection in biliary tree is not known yet. Moreover, the egg length of *Fasciolopsis* 120~130 $\mu$ m, and that of *Echinostoma* 99~140 $\mu$ m. Therefore, the eggs in this case could be best identified as *Fasciola* sp.

The tunnel-like lesions in the gallbladder wall with the eggs around strongly suggested that the adult fluke should have been there in the wall in this case. It seemed that the fluke might penetrate the bladder wall only in a short distance then moved elsewhere probably into the cavity so that worm section was not found. However, surgical exploration did not find out any fluke in his biliary duct.

Human fascioliasis is introduced mainly by watercress(Hardman *et al.*, 1970; Rondelaud, 1980). However, it is not common in Korea. The source of infection of this case might be aquatic vegetation considering the environment in rural community.

*Fasciola* in human inhabits mainly in the liver or bile duct(Munro, 1965, Hardman, 1970; Ashton *et al.*, 1970), but ectopic parasitism is not uncommon. Subcutaneous tissue(Fattah *et al.*, 1964), pancreas(Imai *et al.*, 1974), epididymis and central nervous system(Aguirre Errasti *et al.*, 1981), stomach(Acosta-Ferreira *et al.*, 1979), colon(Lee *et al.*, 1982; Park *et al.*, 1984) and heart as a secondary lesion(Potier *et al.*, 1981) are ever recorded.

The present case could be regarded as an ectopic case, because the worm migrated the gallbladder wall. This is the 5th case of human fascioliasis in Korea, and the first case proved by ova identification in the gallbladder wall. One should expect more cases of human fascioliasis than ever recorded in this country, considering the high prevalence among the cattle. More attention to the large operculated ova passers will find out further cases especially the non-surgical cases. Serological approach such as ELISA would be a good ancillary method of pre-operational diagnosis of fascioliasis (Ambroise-Thomas *et al.*, 1980), especially in the case of ectopic parasitism.

### SUMMARY

The authors would record the fifth case of human fascioliasis in Korea, occurring in a 48 year old Korean man who lived in Munkyong, Kyongsangbuk-do. The diagnosis was based on the morphology and measurements of the eggs which were collected in necrotic debris from the tunnel-like ulcerations of the gallbladder wall which was surgically removed for a gall stone. Although we failed to find out the fluke in the specimen, there found an evidence of once presence of *Fasciola* in the inflamed wall of the gallbladder in this patient.

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==국문요약==

담석을 동반한 담낭내 간질 감염 1례

서울대학교 의과대학 기생충학교실, 병리학교실\* 및 풍토병연구소  
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경북 문경군에 거주하는 48세의 남자가 반복되는 상복부의 선통을 주소로 점촌의 외과의원에서 진찰과 검사를 받은 결과 담낭내에 담석이 있음을 확인받고 수술을 위해 영남대학병원에 입원하였다. 1984년 11월 30일에 담낭절제술을 받아, 담석을 제거하였고, 수술 당시의 관찰에서 간과 담도에 별다른 소견이 없었다. 절제된 담낭의 병리조직표본에서 담도에서 4cm되는 부위에 궤양, 출혈, 담낭벽의 국소적인 파괴 및 호산구를 위시한 염증세포의 전반적인 침윤등이 관찰되었고 괴사된 조직과 경계부에서 총란이 관찰되었다. 이 병변 부위를 긁어 모아 총란을 관찰한 결과 길이가 143~155 $\mu$ m이고 난개가 있어, 간질(*Fasciola* sp.)의 총란으로 진단하였다.

이 증례를 문헌상 간질의 5번째 국내감염례로 보고한다.

EXPLANATIONS FOR FIGURES

- Fig. 1.** A portion of a thickened gallbladder wall near the neck, showing irregular ragged ulcerations and tunnel-like lesions(arrows).
- Fig. 2.** Photomicrograph of the gallbladder wall, showing inflammatory exudate filling the ulceration, in which two eggs (arrow) are seen, HE stained,  $\times 40$ .
- Fig. 3.** An egg (arrow) in amorphous material in a mucosal gland, HE stained,  $\times 40$ .
- Fig. 4.** Disfigured eggs (arrows) in necrotic debris inside the tunnel-like lesion, HE stained,  $\times 40$ .
- Fig. 5.** A whole egg harvested in scratched material from the necrotic focus of the gallbladder wall.

