

## A Case of Taeniasis Saginata Diagnosed by Radiological and Endoscopical Examination<sup>\*)</sup>

Hamid TAHIR, Ken HARUMA, Yuji MATSUMOTO,  
Masaaki SUMIOKA, Ken HIRATA, Eiko SANUKI,  
Takashi KUMAMOTO, Toshio SHIRAKAWA\*,  
Koji SUMII and Goro KAJIYAMA

*The First Department of Internal Medicine, Hiroshima University School of Medicine, Hiroshima 734, Japan*

*\* Kita Kyushu Yukawa Soogoo Hospital, Kita Kyushu 800-02, Japan*

(Received December 3, 1982)

*Key words: Taeniasis-radiology-endoscopy*

### ABSTRACT

A case of taenia saginata infestation in the small bowel of a 52-year-old woman is reported. A clinical sign and laboratory examination showed no abnormality. Immunoelectrophoresis was positive. Radiologic and endoscopic examinations confirmed the presence of a worm in the distal jejunum to the ileum. By treatment with 30 mg/kg body weight of bithionol, the patient passed a taenia saginata 4 hours later. Follow-up examination for 3 months after the treatment showed no residual evidence of infection.

### INTRODUCTION

Beef tape worms that infest humans, taenia saginata, exist throughout the world<sup>4,10)</sup> including Japan. These parasites are, however, at present rare in Japan. Geographically they are found in Hokkaido and the northern parts of Honshu<sup>6,7)</sup>, and very rarely in Okayama<sup>7)</sup> and Hiroshima.

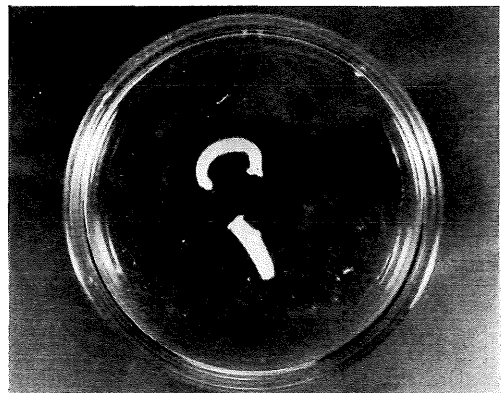
Human infestation is acquired by consumption of raw beef containing viable cysticercus larvae<sup>1,3,5,7,10)</sup>. In the adult stage, they are known to be the parasites in the intestinal tracts only in man, whereas the cysticerci in the larval stage appear in animals<sup>3,10)</sup>. Taeniasis is mostly asymptomatic<sup>3,6,7)</sup>. Radiological and endoscopical studies of taenia saginata have been reported by several authors.

This case is an additional report of radiographic and endoscopical detection of taenia saginata.

### CASE REPORT

The patient was a 52-year-old woman with a history of passing "worms" in the stool 27 years ago. She was free from any gastrointes-

tinal symptom except nausea. In 1945 she ate raw beef. She had never travelled abroad. In 1962 she was admitted to the Hiroshima Prefectural Hospital and diagnosed as taeniasis. On July 29, 1981 she was hospitalized in Hiroshima University Hospital. Physical examination revealed no abnormalities. Laboratory examination (Table 1) revealed a haemoglobin level of 11.7 gr/dl and normal blood picture. The white blood cell count was 9200/ml with 7% eosino-



**Fig. 1.** Segments of taenia saginata found in the stool

<sup>\*)</sup> ハミド・タヒール, 春間 賢, 松本勇次, 隅岡正昭, 平田 研, 讃岐英子, 熊本 隆, 白川敏夫, 隅井浩治, 梶山 梧朗: X線および内視鏡検査で診断した無鉤条虫症の一例

**Table 1.** Laboratory examinations

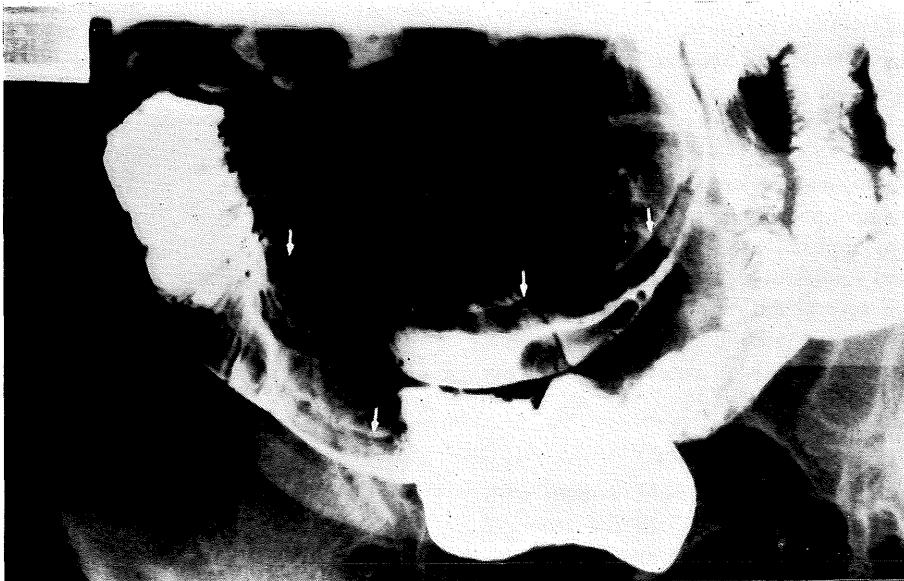
Urinalysis		Liver function	
Protein (-) Sugar (-)		GOT 25 U/l	GPT 19 U/l
Urobilinogen (-)		LDH 315 U/l	ALP 44 U/l
Stool examination		GTP 23 U/l	LAP 36 U/l
Occult blood (-)		Cholinestrase	4370 U/l
Ova & parasites (-)		Blood Sugar	84 mg/dl
Peripheral blood		Serum protein fraction	
Hb 11.7 g/dl	WBC 9200/mm <sup>3</sup>	Total protein	6.8 g/dl
RBC 4.06 million		A/G ratio	1.52
Hematocrit 36.0%		Serum Biochemistry	BUN 22 mg/dl
Cells, different count		Creatinine	0.7 mg/dl
Lymphocytes	55%	Na 140 mEq/l	K 4.0 mEq/l
Monocytes	2%	Cl 107 mEq/l	Ca 4.5 mEq/l
Eosinophils	7%	P 4.0 mEq/l	Fe 130 ug/dl
Basophils	2%	Vitamin B12	780 pg/ml
Stab	1%	CEA	1.20 ng/ml
Segments	33%	Ig E	69 IU/ml

phils. Immunoelectrophoresis of taenia saginata was positive. Stool examination found neither an egg nor a proglottid of taenia saginata, but segments of a worm were found in the stool (Fig. 1).

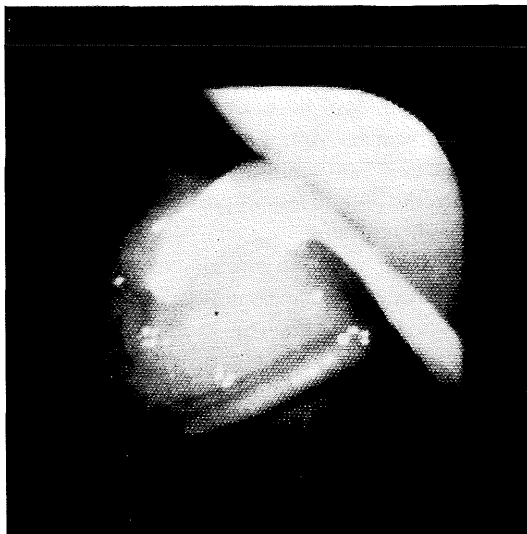
X-ray examination by the double contrast technique with compression of the small bowel disclosed a linear radiolucent area from the

distal jejunum to the ileum (Fig. 2).

Three days later she had intestinal examination by colonoscopy (Fujinon Col-MP). From one-third of the anal side of the ascending colon to the Bauhin valve, a long, flat, whitish and mobile formation of worm was observed (Fig. 3). Biopsy specimens from the small intestinal mucosa was normal.



**Fig. 2.** Taenia saginata shown as a linear radiolucent area from the distal jejunum to ileum with double contrast compression



**Fig. 3.** The body of taenia saginata detected in the ascending colon by colonoscopy (Fujinon Col-MP).

The patient was treated with bithionol 30 mg/kg body weight and 4 hours later, the patient passed 1.30 meter length of worm (Fig. 4). This worm was easily identified as taenia saginata, but no scolex was found on stool examination. In follow-up stool examination during the period of 3 months after the treatment no segment nor ovum was found in the

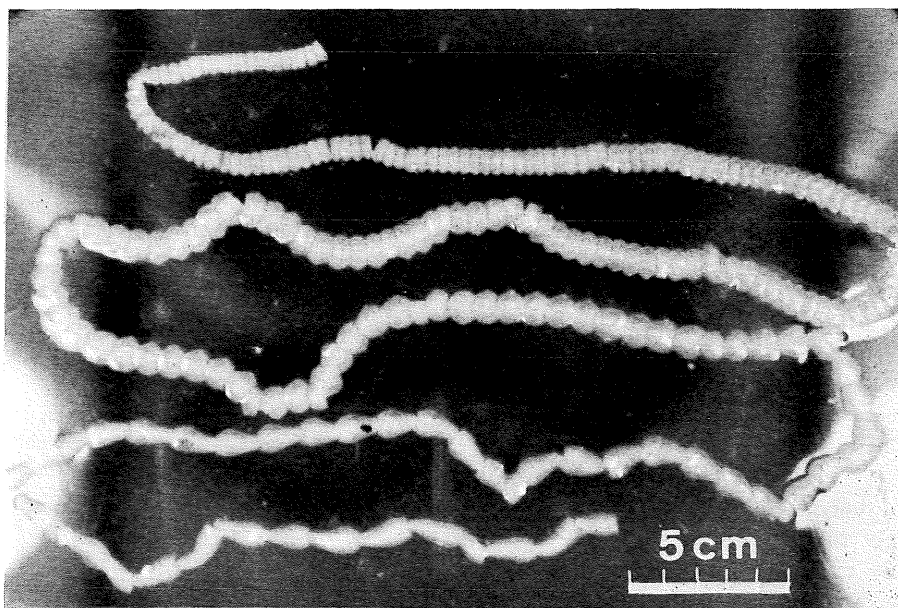
stool specimen.

## DISCUSSION

A beef tape worm is characterized by possession of a scolex without a rostellum and rostellar hooks. The scolex of beef tape worm is usually embedded in the mucosa of the small intestine. The scolex has a maximum diameter of 1.5-2 mm with a neck not more than one-half as broad as the scolex. A beef tape worm grows gradually from 1-2 mm in diameter at its neck to 1-2 mm in thickness and 10-12 mm in width at its distal end<sup>3,5,9</sup>. Because of extreme narrowness of the anterior end and non-possession of an intestinal tract, X-ray demonstration of this worm is rare. In double contrast examination, the body of beef tape worm appears in linear translucency along the ileum.

A beef tape worm may attain a length of 25 meters or more in an adult stage in a favorable environment, but usually measures between 15 and 20 feet<sup>1,3,5,8</sup>. In our case the length was 1.3 meter.

This worm is constituted with several hundred of segments, having 1000-2000 proglottides. The life span is up to 25 years<sup>1,3,5,8</sup>. In our case, if there was no reinfestation, the life span was estimated to exceed 27 years.



**Fig. 4.** 1.30 meter length of taenia saginata passed 4 hours after treatment with bithionol 30mg/kg body weight

In spite of the fact that a beef tape worm is usually found in the lower jejunum or ileum, its proglottides have been found to infest the vermiform appendix and cause acute appendicitis<sup>1,2,5,9</sup>.

A beef tape worm grown to a large size may result in mechanical obstruction of the bowel, undernutrition and release of toxic metabolites which are absorbed. Pancreatic necrosis after penetration into the Wirsung's duct only rarely occurs<sup>5</sup>. Acute abdomen has been reported due to invasion of the segment of beef tapeworm into the peritoneal cavity from the intestinal lumen<sup>1,2,9</sup>.

Symptoms are often absent<sup>1,6,7</sup> but may include nausea, vomiting, epigastric pain, vague abdominal discomfort, slight weight loss, diarrhea, nervousness, vertigo and increased or decreased appetite. Moderate eosinophilia may be present.

Taeniasis is best diagnosed by Scotch-tape and/or stool examination for eggs and proglottides, but radiological and endoscopic observation may be of critical diagnostic importance, when Scotch-tape and/or stool examination proved negative.

*Ascaris lumbricoides* is the only parasitic form which is likely to cause confusion with a beef tape worm. *Ascaris lumbricoides* is cylindrical and much shorter (15-30 cm long), possessing an intestinal tract. When infested with a large number of *Ascaris lumbricoides*, they may be seen as parallel filling defects in either the small intestine or the colon. Tangled groups of *Ascaris lumbricoides* can be occasionally visualized without the use of contrast media, as they have the appearance of positive shadows against gas in a distended segment of the small intestine<sup>5,8</sup>.

A beef tape worm characteristically appears as a single, gradually tapering, ribbon-like, filling defect in a barium column within the ileum. With the scolex attached to the jejunal mucosa, the proximal end is generally not radiographically demonstrable because of considerable narrowness<sup>4,5,8</sup>. The linear filling defect is usually continuous, but discontinuities may be seen, because only the wider portion of the worm in profile is visualized. The beef tape worm in our case was demonstrated along the distal jejunum to the ileum.

Endoscopic examination showed a long, flat,

whitish, mobile formation of the worm. The body of this worm was seen from one-third of the anal side of the ascending colon to the Bauhin valve, and was easily identified as a beef tape worm. Immunoelectrophoresis may be performed as an additional examination, although its value is less important as a diagnostic instrumentation.

The use of bithionol for the treatment of 6 human infestations with tape worms was attempted first by Yokogawa et al.<sup>12</sup>. All these 6 cases discharged a long strobila within 24 hours after the treatment without a scolex. The segment close to the scolex was remarkably destroyed or degenerated. The author also applied bithionol and 4 hours after the treatment, a worm 1.3 meter long was discharged without a scolex. In follow-up examination for the period of 3 months after the treatment no segment nor ovum was found in the stool specimen.

#### ACKNOWLEDGEMENT

The authors wish to thank Prof. Moriyasu Tsuji, Department of Parasitology, Hiroshima University School of Medicine for his review and correction of this paper.

#### REFERENCES

1. **Brandborg, L. L.** 1978. Parasitic Diseases. In: Gastrointestinal Diseases. Pathophysiology. Diagnosis. Management. Ed. M. H. Sleisenger, J. S. Fordtran. Saunders, Philadelphia, 1172-1173.
2. **Dev, P. G.** 1981. Acute abdomen due to taenia saginata. *J. Indian M. A.* **76** : 63-64.
3. **Faust, E. C., Russel, P. F. and Jung, R. C.** 1970. Clinical parasitology. Lea & Febiger, Philadelphia. 535-538.
4. **Fetterman, L. E.** 1965. Radiographic demonstration of taenia saginata unsuspected cause of abdominal pain. *N. Engl. J. Med.* **272** : 364-365.
5. **Gold, B. M. and Meyers, M. A.** 1977. Radiologic manifestations of taenia saginata infestation. *Am. J. Roentgenol.* **128** : 493-494.
6. **Kihara, T., Tsuji, O., Nobayashi, R., Okazaki, S. and Kosaka, K.** 1973. The clinical studies of the beef tape worm. *Jap. J. Gastroenterology* **70** : 175-178.
7. **Kihara, T., Kobayashi, R. and Kosaka, K.** 1973. The epidemiological studies of the broad tape worm (*Diphyllobothrium latum*). *Jap. J. Gastroenterology* **70** : 189-195.
8. **Monroe, L. and Norton, R.** 1962. Roentgenographic sign produced by taenia saginata. *Am. J.*

Dig. Dis. 7 : 512-522.

9. **Payne, J.** 1965. Taenia infestation of the vermiform appendix. *Med. J. Aust.* 57 : 768-769.
10. **Simanjuntak, G. M., Margono, S. S., Sachlan, R., Harjono, C., Rasidi, R. and Sutopo, B.** 1977. An investigation on taeniasis and cysticercosis in Bali. *Southeast Asian J. Trop. Med. Public Health* 8 : 494-497.
11. **Yazaki, Y., Ishibashi, M., Okamura, K., Shibata, Y., Tominaga, Y., Sekiya, C. and Namiki, M.** 1980. Radiologic and endoscopical diagnosis of diphylobothriasis. *Gastrointestinal endoscopy* 22 : 635-641.
12. **Yokogawa, M., Yoshimura, H., Okura, T. and Saito, M.** 1962. The treatment of taenia saginata with bithionol. *Jap. J. Parasitol.* 11 : 39-44.