Parasite infection in an officer of an ocean liner

Hiroyuki Kato, Miwa Shirotni, Masafumi Enoki, Kazuhisa Oogushi, Sei Emura, Toshinobu Takashima, Keizo Ohmori

A 51-year-old officer of an ocean liner was hospitalised complaining of worms emerging from the anus and in the stool starting about three months earlier. He reported a weight loss of 7 kg over six months. About six months prior to the admission, he reported often having eaten raw or undercooked beef purchased in South America (Chile and Colombia) during a voyage.

General physical examination did not reveal anything specific. Laboratory findings showed no abnormal findings except for mild eosinophilia. An egg in the stool is shown in figure 1. A specimen of the parasite body (proglottid) in the stool, which was stained by black ink injection, is shown in figure 2.

Figure 1 Egg in the stool (bar 30 μ m)

Figure 2 The parasite body (proglottid) stained by black ink injection (bar 10 mm)

Department of
Internal Medicine,
Saga Medical School,
Nabeshima, Saga

849, Japan

H Kato

M Shirotni

M Enoki

K Oogushi

S Emura

T Takashima

K Ohmori

Accepted 20 March 1997

Questions

- 1 What is the diagnosis?
- 2 How would you treat this condition?

Answers

QUESTION 1

The egg in the stool is covered by an embryophore, which is very thick and riddled with numerous tiny pores, giving it a striated appearance on microscopic section (figure 1). These findings indicate the egg of *Taenia saginata* or *T solium*, but these species cannot be differentiated by the appearance of the egg. *T saginata* infection was diagnosed because of the gravid proglottid in the stool which contained more than 15 lateral uterine branches per side (figure 2).

QUESTION 2

Numerous taeniocides have been used in the past. Currently, niclosamide and praziquantel are the drugs of choice.¹ Niclosamide is administered at a dosage of 2 g to be chewed thoroughly in a single dose after a light meal. A few patients experience nausea and abdominal pain.^{2,3} The recommended dosage of praziquantel is about 5–10 mg/kg as a single dose. Occasionally, there are complaints of abdominal discomfort, headache and dizziness, but these are not clinically significant.⁴ In this case, administration of praziquantel resulted in discharge of the entire body of the worm, which measured about 110 cm in length (figure 3).

Discussion

T saginata infections are highly prevalent in Africa, portions of Mexico and Argentina. To a lesser extent, middle Europe is also an endemic foci. However, it is infrequently acquired in developed nations, where most clinical cases involve foreign travel.¹ As suggested by the name 'beef tapeworm', it is usually found in cattle. The adult worm is sometimes 4–6 m in length and has 1000–2000 proglottids.

The habitat of the adult worm is the upper jejunum. The developing proglottids extend down the small intestine. The most distal proglottids are gravid (ie, contain infective eggs) and tend to break off from the rest of the worm. If the gravid segments come to rest in grazing areas, they may be ingested by cattle. The proglottids are then digested and the eggs

released. The hexacanth larva, the oncosphere, hatches from its egg, actively penetrates through the intestinal wall into the lymphatics or blood vessels, and is carried to intramuscular connective tissue, where they develop into cysticerci, the stage infective for humans. When raw or undercooked beef containing the infective cysticerci is ingested by humans, the cysticercus, released from its surrounding muscle tissue by digestion in the small intestine, everts its scolex and attaches to the mucosa, where it develops into a fully grown tapeworm within three months.¹

The most important differential diagnosis is *T solium*, which is the most dangerous taeniasis because it can cause human cysticercosis which can be a serious, even fatal disease. Eggs of *T saginata* and *T solium* are identical in appearance and are not useful in differentiation.² The following features are helpful in making a diagnosis. The usual intermediate host is cattle in *T saginata*, but pig in *T solium*. *T saginata* is more likely if the patient has experienced escapes of whitish worms from the anus, independent of defecation, which generally squirm for a while, because the gravid proglottid of *T saginata* is more muscular and active than those of *T solium*. The gravid proglottid of *T saginata*, when pressed between glass slides, is less transparent than that of *T solium* because of the thicker muscle layer.⁵ The gravid proglottids of *T saginata* reveal characteristic uterine branching. In *T saginata*, the number of lateral branches on one side of the median stem average 15 to 35, while in *T solium* they average 7 to 10.² A specimen such as that shown in figure 2 can be easily made by injecting black ink using a 27-gauge injection needle and syringe through the genital pore which opens on the lateral side of proglottid.

Final diagnosis

Taenia saginata infection.

Keywords: *Taenia saginata*, cattle, praziquantel

Figure 3 The entire body of the worm, which measured about 110 cm in length

Taenia saginata infection: features

- eating raw or undercooked beef
- a history of passing proglottids
- the egg is covered by a thick embryophore showing a striated appearance
- the gravid proglottid contains more than 13 lateral uterine branches per side
- niclosamide and praziquantel are used as taeniocides

Learning points

Diagnosis of *Taenia saginata* infection depends upon the finding of gravid proglottids. Specimens can easily be made by injection of black ink

- 1 Despommier DD, Gwadz RW, Hotez PJ. Cestodes. In: *Parasitic diseases*. 3rd edn. New York: Springer-Verlag, 1995; pp 75–106.
- 2 Beck JW, Davies JE. The cyclophyllidean tapeworms (Cyclophyllidae). In: *Medical parasitology*. Saint Louis: The CV Mosby Company, 1976; pp 121–9.
- 3 Keeling JED. The chemotherapy of cestode infections. *Adv Chemother* 1978; 3: 109–52.
- 4 Groll E. Praziquantel for cestode infections in man. *Acta Tropica* 1980; 37: 293–6.
- 5 Miyazaki I. Taeniasis. In: *An illustrated book of helminthic zoonoses*. Tokyo: International Medical Foundation of Japan, 1991; pp 224–47.

Abdominal pain in a cirrhotic patient with ascites

Ivan Touze, Tarik Asselah, Arnaud Boruchowicz, Jean-Claude Paris

A 45-year-old woman had been treated by our medical service for alcoholic cirrhosis and ascites. She had a reducible umbilical hernia. Frequent large-volume paracentesis was required to control ascites. Two days after one of the periodic paracenteses, she complained of abdominal pain, vomited and was hospitalised. A plain radiograph of the abdomen was performed (figure).

Questions

- 1 What does the abdominal X-ray show?
- 2 What is the most probable diagnosis?
- 3 How would you treat this patient?

Clinique des maladies
de l'appareil digestif et
de la nutrition,
Hopital Huriez,
CHRU Lille, 59037
Lille, France
I Touze
T Asselah
A Boruchowicz
J-C Paris

Accepted 20 March 1997

Figure Plain abdominal X-ray