

CASE REPORT

INFECTION OF AN ADULT IN MIE PREFECTURE, JAPAN BY *BERTIELLA STUDERI*

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Abstract. Two gravid strobila without scolex were passed by a 23-year-old male in Mie Prefecture, Japan. Morphological features were comparable to characteristics of *Bertiella studeri*. Although two children's cases have already been reported, this is the first case of an adult in Japan since the occurrence of *B. studeri* was proven in Japan.

Bertiella studeri, a cyclophyllidean tapeworm of the family Anoplocephalidae, is found in the intestine of monkeys and other primates in South Asia, Philippines, Mauritius and Africa (Spasskii, 1951). The life cycle of this tapeworm was elucidated with the mite, *Schelorbates laevigatus*, being shown as an experimental intermediate host (Stunkard, 1940).

Human infection is believed to occur by accidental ingestion of mites containing cysticeroid larvae of this tapeworm and many human cases have been reported mainly from tropical areas (Faust *et al.*, 1971). In Asia, human cases have been reported from India, Indonesia, Singapore, Sri Lanka, Thailand, Philippines. Although two cases of infection in children have been reported in Japan, this is the first case of an adult infection.

A twenty three-year-old male, employee of a company, living at Seki Town, Mie Prefecture, Japan, consulted local physician with two white thick objects measured about 1 cm in length both in June 1994. Afterwards he frequently and spontaneously passed while objects with his stool for about 20 days because the laboratory technicians from the private medical institution could not identify these objects. They were later identified to be *B. studeri* by us, the patient was then treated with Aminosidin. No additional strobila were passed. No blood examination was done because he didn't show symptoms of abdominal discomfort and pain. This patient had traveled to Greece in March 1994 but he had never been to any tropical areas.

The two white objects brought to the clinic were

apparently parts of tapeworm without scolex. They measured 1 cm in length (22 proglottids), 1.2 cm in width and 2.9 mm in thickness (Fig 1). Specimens were fixed in 10% formalin solution, then embedded in paraffin as in the usual manner. They were cut into serial transverse and horizontal sections to examine the morphological characteristics in detail. The musculature of the proglottids was well developed and longitudinal muscular fibers formed bundles disposed in two layers. The uterus containing ova was widely spread (Fig 4). Uterine pouches still remained in some proglottids but a uterine pore was apparent in almost all proglottids (Fig 2). Each proglottid had a single set of reproductive organs. The oval cirrus sac, largest diameter 520 μ m, filled with spermatozoa lay anteriorly and dorsally to the vagina. The ovary could not be observed clearly. The vagina was surrounded by a thick layer of gland cells and lay posteriorly and ventrally to the cirrus sac. However its correct size could not be determine though it was smaller than the cirrus sac. The genital pores were irregularly alternate; often two but never more than two succession pores were observed (Fig 3).

Eggs, $50.6 \pm 3.1 \mu$ m ($n = 20$), discharged from the uterine pore were turbid because of wrinkles on the surface. They become transparent with time and the pyriform apparatus and onchosphere clearly appeared. Except for the size of the eggs, these morphological features were identical to those of gravid proglottids from *B. studeri* found in Japanese macaque, *Macaca fuscata* (Ando *et al.*, 1994). However, it has been reported by many researchers that the size of eggs varies from 40-60 μ m. There-

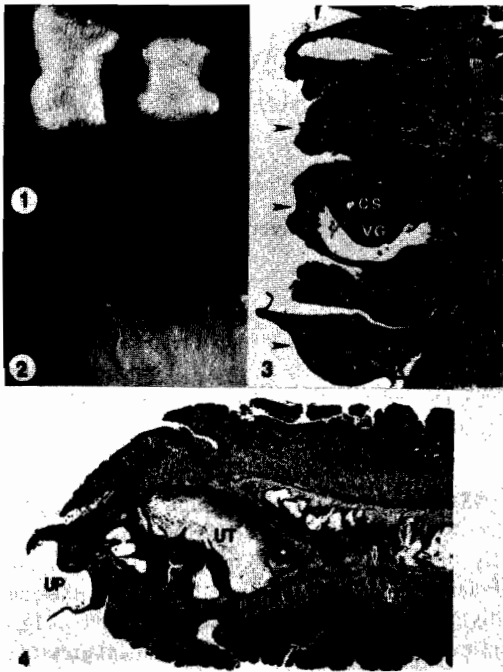


Fig 1—Gravid proglottids passed with stool. Note one very short proglottid looks like a wrinkle.

Fig 2—Uterine pore of gravid proglottids.

Fig 3—Horizontal section of gravid proglottids. Arrows indicate proglottids having genital pore. Bar: 500 μ m, CS: cirrus, VG: vagina.

Fig 4—Transverse section of gravid proglottids. Bar: 1 mm, LM: longitudinal muscle bundles, TM: transverse muscle, UP: uterine pore, UT: uterus.

fore, the white objects passed by this patient were identified as gravid proglottids of *B. studeri*.

Among 29 species of the genus *Bertiella*, only 2 species, *B. studeri* and *B. mucronata*, are known to infect man (D'Alessandro *et al*, 1993). Although 53 human cases including this case, are reported in the world, with 18 cases in Indonesia (Kosin and Kosin, 1992) most of them are in children. Two child cases (a 3 year-old female and 2 year-old female) have been reported in Japan also (Kojima *et al*, 1992; Iseki *et al*, 1993). This is the first adult case reported in Japan. Ando *et al* (1994) investi-

gated the stools of Japanese macaque to clarify the infectious source of the first case and proved the occurrence of *B. studeri* in 2 out of 4 Japanese macaques, *Macaca fuscata*, from the Suzuka Mountains in Mie Prefecture, Japan. Subsequently, they found this tapeworm in 1 out of 19 Japanese macaques from the Suzuka Mountains. In these areas, Japanese macaques appear in zones of human habitation to obtain food. As the patients of the first case and this case lived in different small towns located at the foot of Suzuka Mountains, they might have been infected with *B. studeri* near there. This is the first case after proof of the occurrence of *B. studeri* in Japan. Three human cases have occurred one after another over the last three years in Japan. Accordingly, tapeworms must be identified with great care as new human cases are likely to occur in the future.

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