

An unusual over-gravid female of *Enterobius vermicularis* recovered from a child

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Abstract: An unusual over-gravid female of *Enterobius vermicularis* was recovered from a 15-month old child by cello-tape anal swab. The patient resided in Inchon and complained of severe anal itching. The worm measured 7.8 mm in length and 0.5 mm in width, and retained typical morphologic features of *E. vermicularis* such as cephalic alae and a sharply pointed posterior end. In this gravid female, peculiarly, the uterus was tremendously distended, and about 99% of the whole body length was completely packed with a great number of eggs. Other internal organs were difficult to observe. This paper describes a peculiar over-gravid female of *E. vermicularis*.

Key words: *Enterobius vermicularis*, pinworm, gravid female, child, morphology

Enterobius vermicularis (pinworm, threadworm) is a parasite of the large intestine of humans, and highly prevalent throughout the world (Beaver *et al.*, 1984). Most of the pathological changes due to enterobiasis occur in the cecum and appendix (Boulos *et al.*, 1973), around the anal region, and sometimes in ectopic locations (Chandrasoma *et al.*, 1977; Tornieporth *et al.*, 1992; Chung *et al.*, 1997). Surgically removed appendices were found to be invaded by this nematode at a rate varying widely from 1.0% to 38.0% (Warren *et al.*, 1985). Gravid worms of *E. vermicularis* migrate to the anus at night, and appear on the perianal skin where they die after laying their eggs. The deposition of eggs is irritating, so the usual symptom is pruritus ani. The worms at times enter into the vagina to release eggs in female patients. They could also travel through

the entire genital tract to the peritoneal cavity, causing vulvovaginitis, endometritis, and salpingitis (Kacker, 1973; Chandrasoma *et al.*, 1977; Garud *et al.*, 1980; Nutting *et al.*, 1980). Although great interest has been taken in studies on the biology and pathogenicity of the human pinworms, information on its abnormal morphology is relatively scarce. We found a peculiar over-gravid female of *E. vermicularis* from a child and report here its morphological characteristics.

The worm was obtained from a 15-month old Korean child by cello-tape anal swab, and measured 7.8 mm in length and 0.5 mm in width. The body was spindle-shaped, with a sharp pointed tail (Figs. 1 & 2). The cuticle near the anterior end of the body, cephalic alae, was characteristically swollen on the ventral and dorsal sides (Fig. 3). The middle part of the worm was much distended, and the vulva opening was midventrally seen in front of the middle third of the body (Fig. 4). The uterus was tremendously distended, and the

* Received 23 June 1997, accepted after revision 4 July 1997.

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Fig. 1. The over-gravid female of *E. vermicularis* collected from the child. Bar = 1 mm. **Fig. 2.** Posterior end of the over-gravid female. Note the long pointed tail (arrow). Bar = 5 μ m. **Fig. 3.** Anterior part of the worm. Note the swollen cuticle, cephalic alae, at the head portion (arrows). Bar = 10 μ m. **Fig. 4.** The vulva opening (arrow) of the worm. Bar = 10 μ m. **Fig. 5.** An egg liberated from the vagina of this worm. Bar = 20 μ m.

entire body was completely packed with a great number of eggs. All other organs such as the esophagus and intestine were difficult to observe. The eggs were elongate-ovoidal, distinctly compressed laterally, flattened on one side, and measured 60.0 to 62.5 μ m in length by 25.0 to 31.0 μ m in width (Fig. 5).

Hulinska (1968) classified female worms of

E. vermicularis according to their sexual maturity and external morphological features; the size of the body, differentiation of the excretory organ, location of the excretory pore, distance of the anal pore from the posterior end, differentiation of the sexual organ, and distance of the vulva from the anterior portion. Thus the worms were divided into five

developmental stages; larval stage, youngest female, sexually immature female, maturing female, and sexually mature one. The length of the worms in various developmental stages ranged from 0.8 mm to 11.0 mm (Hulinska, 1968). Our specimen was regarded as a sexually mature one.

The morphology of various developmental stages of *E. vermicularis* was also described by Cho *et al.* (1982). Accordingly to them, sexual organs occupied only 20.0% of the trunk length in worms of 2.0 mm length, and 27.8~42.0% in worms of the body length 3.0~4.0 mm. In gravid females, 7.5~9.3 mm long, about 90% of the trunk length (70.0% of the whole body length) was occupied by the full-grown ovary and uterine loops full of eggs. In the present specimen, however, it was surprising and a peculiar feature that about 99% of the whole body length was compactly filled with uterine tubules full of eggs. It is difficult to explain the reason why the present worm was over-gravid unlike usual gravid females.

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=초록=

소아에서 검출한 특이한 과수태 요충

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심한 항문 주위 가려움증이 있는 15개월 된 소아(인천 거주)로부터 과수태 요충 1마리를 항문 주위 도말법으로 회수하였다. 총체는 길이가 7.8 mm이고 폭이 0.5 mm였으며, 두익(頭翼), 자궁내 충란, 뾰족한 꼬리 등 요충 자충의 특이한 형태학적인 특징을 가지고 있었다. 그러나 이 총체는 과수태한 총체로서 자궁이 총체 전단에서부터 후단까지 길게 확장되어 있었으며, 총체 길이의 약 99%까지 수많은 충란으로 가득 차 있고 다른 기관은 관찰하기 어려운 특이한 총체이었다.

(기생충학잡지 35(3): 215-217, 1997년 9월)