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☐ **Brief Communication** ☐

Enzooticity of the dogs, the reservoir host of *Thelazia callipaeda*, in Korea

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Abstract: The reservoir hosts of *Thelazia callipaeda* were examined. The eyes of the 76 dogs raised at farm, 78 military dogs (shepherds), 96 cattle, and 105 pigs were investigated for the presence of eyeworm. Among them, six worms of *T. callipaeda* were collected from two dogs raised at farm (2.7%), and 188 worms from 26 shepherds (33.5%). No worms were recovered from the cattle or pigs. These results suggest that the dogs, especially the military dogs are serving as a reservoir host of *T. callipaeda* in Korea.
Key words: *Thelazia callipaeda*, dogs, reservoir host

Thelazia callipaeda is occasionally reported in man, and total of 24 cases of human thelaziasis had been reported in Korea (Ahn et al., 1993; Hong et al., 1995). Considering the possibility of many missed cases, much more human infections might have occurred. The dog has been revealed as its natural definitive host in Korea (Choi and Cho, 1978), but its infection status among the dogs was not yet examined, and the possibility that other animals act as the reservoir hosts of *T. callipaeda* has not also been investigated. This study was conducted to determine the infection rate of *T. callipaeda* in various animals such as the dog, cattle and the pig.

This study was conducted between October 2000 and September 2001 in Chungju, Chungcheongbuk-do, and Chuncheon, Gangweon-do. The prevalence and intensity of parasite infection in the dogs raised at the plantations were estimated from necropsies of 76 dogs at a butchery located in Chungju. The cattle were from nearby farms including in Chungju and Eumseong-gun, and the pigs were from the neighbors of Chungju. Ninety six cattle and 105 pigs were examined. In addition, 78 military dogs at several locations in Korea including Gangweon-do, and Chungcheongbuk-do etc. were examined as well.

For the eyeball examination, the nictitating membranes were lifted with a forcep, and the surface of the eyeballs and area beneath the third eyelid were searched for any nematodes. When the parasites were found, they were removed and placed in glass vials containing 0.9% saline. Later, the parasites were cleared in lactophenol and mounted with glycerin-jelly, and specific measurements were obtained using an ocular micrometer. The criteria used for measurement were as previously described by Choi et al. (1989).

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Table 1. Infection rates of *Thelazia callipaeda* in various animals

	No. of examined	No. of infected (%)	No. of male worm	No. of female worm
Dog at farm	76	2 (2.7)	2	4
Military dog	78	26 (33.5)	79	109
Cattle	96	0 (0.0)	-	-
Pig	105	0 (0.0)	-	-

Table 2. Measurements of the worms (dimension: mm)

Structure	Worms (Range)	
	Male	Female
Body length	10.1 (7-11)	15.0 (12-18)
Body width	0.37 (0.25-0.43)	0.38 (0.31-0.48)
Buccal cavity: length	0.02 (0.18-0.30)	0.03 (0.23-0.33)
Anterior end to vaginal opening	-	0.54 (0.42-0.65)
Spicule: length	0.14	-
Anterior end to intestinal junction	0.60 (0.52-0.68)	0.73 (0.57-0.84)
Posterior to anus	0.08 (0.06-0.11)	0.09 (0.05-0.11)
No. of transverse striations/mm	248.0 (170-320)	229.3 (160-330)

Out of 76 dogs raised at farm, six worms of *T. callipaeda* were collected from the conjunctiva of two dogs (2.7%), giving an infection intensity of 3.0. Among the 78 military dogs (shepherd dogs), 26 ones (33.5%) were infected with the eyeworms, and a total of 188 worms were recovered. The average infection intensity per dog was 7.2 (Table 1). No worms were recovered from the cattle or pigs. Measurement data details of the recovered worms are described in Table 2.

All the female eyeworms recovered from this study were identified as *T. callipaeda* judging from the location of the vulvar opening. Because of the difficulty in counting the caudal papillae of male eyeworms, the number of transverse cuticular striations were taken as a key species identifying feature. In *T. callipaeda* the number of striations lies between 150 to over 300 per millimeter, while in *T. californiensis* they are between 30 to 111 (Kofoid and Williams, 1985). The male eyeworms in this study had 248 striations in number, suggesting that they belonged to *T. callipaeda*.

In the present study, the dog, especially the military dog, was revealed as the reservoir host of *T. callipaeda* in Korea. In fact, the infection rate of the military dogs was 12.4-fold higher than that of the dogs at farm. This higher infection rate of the military dogs might result from the fact that they were reared in mountain areas which are known to be inhabited by various insects, which have the ability to adopt roles as vectors. As a vector host for *T. callipaeda*, the fly *Phortica variegata* was reported to be a vector host for *T. callipaeda* in Russia, *Amiota* flies in Japan, and *Musca domestica* in Hubei Province, China (Shi et al., 1988; Kosin et al., 1989). In Korea, the flies belonging to *Amiota* spp. inhabiting in mountain areas are suspected as its vector host (Choi et al., 1989), but the larvae have not been recovered from such flies. Although no worms were present in the eyes of cattle or pigs, the possibility that other animals could share the role of its reservoir host cannot be excluded. In fact, the deer was proven to be the reservoir host of *T. californiensis* (Beitel et al., 1974), and *T. gulosa* was recovered from a giraffe (Walker and Becklund, 1971). In addition, Shi et al. (1988) detected the *T. callipaeda* from cats in China. More attention should be given to identify the reservoir host of eyeworm, and efforts should be made to identify the insect vector in Korea.

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