

Incidence of Brown Dog Ticks, *Rhipicephalus sanguineus*, at a Kennel in Okayama Prefecture

Hisashi INOKUMA, Kazuo TAMURA, and Takafumi ONISHI

Laboratory of Veterinary Internal Medicine, Faculty of Agriculture, Yamaguchi University, 1677-1 Yoshida, Yamaguchi 753, Japan

(Received 7 November 1994/Accepted 2 February 1995)

ABSTRACT. Twenty two adult dogs suffered from tick infestation at a kennel in Okayama Prefecture in the summer of 1994. Four of them had been introduced from U.S.A. Some dogs showed pyoderma, anemia, neutrophilia or eosinophilia. Neither *Babesia gibsoni* nor *Hepatozoon canis* was detected on the smear samples of peripheral blood. The ticks detected were morphologically identified as *Rhipicephalus sanguineus*. This case was a rare incidence of the tick in the other areas of Japan than Okinawa.—**KEY WORDS:** canine, Okayama, *Rhipicephalus sanguineus*.

J. Vet. Med. Sci. 57(3): 567–568, 1995

The brown dog tick, *Rhipicephalus sanguineus*, is one of the three host ticks which prefer a dog host at each stage of life cycle, and widely distributed in the world. But in Japan there have been few reports on the distribution of *R. sanguineus* except in Okinawa Prefecture [4, 6, 7]. This article reports an incidence of *R. sanguineus* at a kennel in Okayama Prefecture.

Twenty two hunting dogs, 10 adult males and 12 adult females, were kept at a kennel in Okayama Prefecture. The kennel was located in a yard of the owner's house. Four of the dogs had been introduced from U.S.A. and none of them from Okinawa Prefecture. The kennel had suffered from tick infestation every summer since 1987 when a dog was first imported from U.S.A. In 1994 also, ticks were seen in the kennel since May.

All the adult dogs were examined for ticks on 12 August in 1994. Adult ticks were seen around the mouth and eyes, in the ears, on the head, neck, shoulder and back, and between the toes. Larvae and nymphs were also seen in

the ears, on the neck, shoulder and back, and between the toes. Table 1 shows the number of adult ticks infesting on each dog. Heavy tick infestation caused pyoderma in some dogs. The insufficiently-engorged ticks were taken off from the dogs and preserved in 70% ethanol for identification. Identification was done based on the key of Rousselot [3]. The ticks had the eyes, festoons and hexagonal basis capituli with palps which were as long as basis capituli (Fig. 1). The marginal groove of scutum was well developed and the median and paramedian grooves were long and profound (Fig. 1). Many punctuations were found on the scutum (Fig. 1). The coxa I had two long spurs (Fig. 2). Triangular ventral plates were present in the male (Fig. 2). The tick was identified as *R. sanguineus* with these morphological characters.

Each dog was examined for red and white blood cell counts, hemoglobin concentrations, packed cell volumes, differentiation of white blood cells, total plasma protein and plasma albumin on the same day. Some dogs showed apparently low level of red blood cell count (less than $550 \times 10^4/\mu\text{l}$), hemoglobin concentration (less than 12.0 g/dl) or packed cell volume (less than 37.0%) [4]. Increased neutrophil counts (more than $11,500/\mu\text{l}$) or eosinophil counts (more than $1,250/\mu\text{l}$) were also found in some cases [4]. Neither *Babesia gibsoni* nor *Hepatozoon canis* was detected on the smear samples of peripheral blood stained with Giemsa. These findings suggested that the infestation with *R. sanguineus* might cause the above hematological changes on its hosts.

R. sanguineus has been hardly found in the prefectures

Table 1. The number of adult *Rhipicephalus sanguineus* on dogs in the kennel

Dog No.	Number of adult tick			Breed	Age (year)	Sex	Origin
	Total	Male	Female				
1	89	10	79	S	6	M	OKAYAMA
2	62	34	28	P	7	F	OKAYAMA
3	55	15	40	P	1	M	OKAYAMA
4	37	14	23	P	1	F	OKAYAMA
5	22	9	13	S	4	F	USA
6	21	9	12	S	6	M	OKAYAMA
7	19	10	9	S	6	F	OKAYAMA
8	19	7	12	S	7	M	OKAYAMA
9	11	5	6	S	4	F	USA
10	8	3	5	B	1	M	HYOGO
11	8	3	5	S	3	M	OKAYAMA
12	7	2	5	S	5	M	USA
13	6	4	2	S	11	F	USA
14	6	4	2	P	2	M	TOKYO
15	5	2	3	S	3	F	OKAYAMA
16	4	0	4	S	5	F	OKAYAMA
17	4	0	4	S	7	F	SHIMANE
18	3	2	1	P	1	M	SAGA
19	1	0	1	P	6	F	HYOGO
20	1	1	0	S	5	F	OKAYAMA
21	1	1	0	S	1	F	OKAYAMA
22	1	0	1	B	3	M	HYOGO

S, Setter; P, Pointer; B, Brittany Spaniel; F, female; M, male

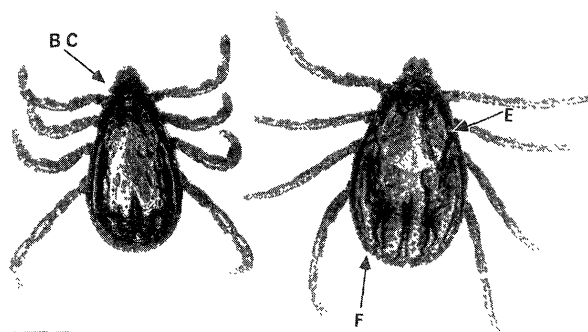


Fig. 1. Dorsal view of insufficiently engorged male (left) and female (right) *Rhipicephalus sanguineus* from a dog. E: eye, F: festoon, BC: basis capituli. Bar = 1 mm.

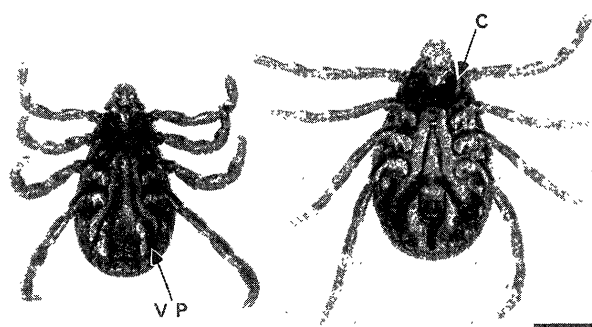


Fig. 2. Ventral view of insufficiently engorged male (left) and female (right) *Rhipicephalus sanguineus* from a dog. C: coxa I, VP: ventral plates. Bar = 1 mm.

in Japan and it seems to be introduced with pets or household effects of U. S. Forces personnel [7]. In our survey, 4 dogs were imported in the kennel from U.S.A. since 1987 and since then the kennel has suffered from tick infestation every summer. It is suspected that ticks were introduced from U.S.A. with the imported dogs and the tick population has been established in the kennel, though there is not sufficient evidence. Even in the northern parts of U.S.A., it is recognized that the tick can be established in kennels [2].

R. sanguineus is a well known vector of such pathogens of dogs as *B. gibsoni*, *H. canis*, *Ehrlichia canis*, *Coxiella burnetii* and *Pasturella tularensis* [1]. Though we did not find any parasites on the blood smear samples of dogs in this cases, the tick might introduce such pathogens to the dogs.

REFERENCES

1. Nesbitt, G. H. 1983. pp. 74-76. In: Canine and Feline Dermatology: A Systematic Approach., Lea & Febiger, Philadelphia.
2. Greiner, E. C. 1994. pp. 121-175. In: Veterinary Clinical Parasitology, 6th ed. (Sloss, M. W., Kemp, R. L., and Zajac, A. M. eds.), Iowa State University Press, Ames.
3. Rousselot, R. 1953. pp. 49-64. In: Note de Parasitologie Tropicale. Vigot Freres, Paris (in French).
4. Schalm, O. W. 1980. pp. 128-129. In: Manual of Feline and Canine Hematology. Veterinary Practice Publishing Company, Santa Barbara.
5. Sugimoto, M. 1937. *J. Cent. Soc. Vet. Med.* 50: 597-615 (in Japanese).
6. Uchikawa, K. and Ito, H. 1969. *Nagoyashi Eisei Kenkyusho Houkoku* 16: 133-134 (in Japanese).
7. Yamaguchi, N., Tipton, V. J., Keegan, H. L., and Toshioka, S. 1971. *Brigham Young Univ. Sci. Bull. Biol. Ser.* 15: 1-226.