BRIEF NOTE

**Pathological Study on Lungworm Disease in the Wild
Japanese Serow, *Capricornis Crispus***

Yoshitaka SUZUKI, Makoto SUGIMURA, Shinji KAMIYA*,
Tatsuo FUJITA and Minako YOSHIZAWA

*Department of Veterinary Anatomy, Faculty of Agriculture,
Gifu University, Kakamigahara-shi, Gifu 504*

Haruo KAMIYA and Masashi OHBAYASHI

*Department of Parasitology, Faculty of Veterinary Medicine,
Hokkaido University, Sapporo-shi, Hokkaido 060*

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Japanese serows are protected by law, so systemic epidemiological investigations have never been performed. During the period from December, 1979 to March, 1980, a large number of these animals caught in Gifu prefecture, were brought to our laboratory. Upon necropsy, pulmonary lesions due to infection with *Protostrongylus shiozawai* were the most common findings. The purpose of this report is to reveal the widespread invasion of this parasite in the Japanese serow, one of the "special natural monument", and to describe the pathological changes in their lungs.

Materials subjected to the present study consisted of 119 cases including fawns, yearlings and adults.

Macroscopically, pulmonary lesions were mostly distributed bilaterally in the caudal part of the posterior lobes. They were somewhat hard in consistency, yellowish-white in color, as large as a soybean to a

thumb in size, and had rather sharp margins. Sometimes fibrous villi were found on the pleural surface. In cut sections, minute white patches were observed throughout the consolidated areas.

Microscopically, the lesions were characterized as follows: 1) Living and dead parasites including adults, larvae and eggs were noted in the cavity of bronchioles, alveolar ducts and alveoli (Fig. 1); 2) cellular reactions consisted of eosinophils, neutrophils, lymphocytes, plasma cells, macrophages and multinucleated giant cells (Fig. 2); 3) parasitic minute granulomas composed of dead parasites and giant cells centrally, and lymphocytes, macrophages and connective tissues peripherally (Fig. 3). Moreover, a remarkable finding was the appearance of numerous globule leucocytes in the bronchiolar epithelium (Fig. 4). The cells were characterized by conspicuous eosinophilic granules or droplets present in the cytoplasm. They were most easily seen in

* Present address: Department of Veterinary Anatomy, Nippon Veterinary and Zootechnical College. Musashino-shi, Tokyo 180.

section with PTAH, where the granules appeared dark blue to black. In other methods, the granules were positive with PAS, variable with alcian blue, and not metachromatically stained with toluidine blue at pH 2.3 and 4.7. Furthermore, hyperplasia of peribronchial lymph follicles and hypertrophy of bronchial circular muscles were prominent in severely affected cases.

Ohbayashi and Ueno (1974) examined two Japanese serows from Nagano prefecture and described *Protostrongylus shiozawai* as a new species [4]. Thereafter, the parasites were also found in animals from Iwate [1], Fukushima and Yamagata prefectures [2]. Parasitologically, lung worms in the present study were identical to those described in the previous reports [4], and the resulting pulmonary lesions were found in over 70% of the cases examined. Therefore, these findings suggest that lungworm diseases were not only enzootic but epidemic among wild Japanese serows.

Histopathologically, pulmonary lesions in the present study were largely similar to those described in the previous reports

[2, 5], but different in the following points. In our cases, eosinophil infiltration was observed to different degrees in almost all of the affected cases. Furthermore, occurrence of globule leucocytes attained 80% of infected cases. The cells were principally distributed in the bronchiolar epithelium with affected lobuli and hardly ever found in those without infection. These facts support the correlation of the occurrence of the globule leucocytes and parasite invasions in the lung, as reported in the digestive tracts of ruminants [3, 6].

References

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要 約

野生ニホンカモシカ肺虫症の病理学的研究（短報）：鈴木義孝・杉村 誠・神谷新司・藤田達男・吉沢美奈子（岐阜大学農学部獣医学科家畜解剖学教室），神谷晴夫・大林正士（北海道大学獣医学部家畜寄生虫病学講座）——昭和54年度特別天然記念物ニホンカモシカの保護管理に関する調査研究（文化庁）の一環として野生ニホンカモシカ119頭を剖検し，*Protostrongylus shiozawai* 寄生による肺病変を多数例（70%以上）に認め，本症の疫学的一端を明かにした．病理組織学的には従来の報告に加え，寄生虫罹患と平行して細気管支上皮内に出現する globule leucocyte に注目した．肺病変は後葉の尾側尖端域に好発していた．

Explanation of Figures

Fig. 1. Numerous larvae and eggs (E) in the alveoli. H.E. staining, $\times 250$.

Fig. 2. Cellular infiltration and multinucleated giant cells enclosing dead larvae. H.E. staining, $\times 250$.

Fig. 3. Parasitic minute granuloma. H.E. staining, $\times 200$.

Fig. 4. Prominent appearance of globule leucocytes in the bronchiolar epithelium. H.E. staining, $\times 500$.