

Fatal Eustrongylidosis in a Young Wild Little Grebe (*Tachybaptus ruficollis*) from Japan

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野生カイツブリ若鳥の Eustrongylidosis による死亡例

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ABSTRACT. A young male little grebe (*Tachybaptus ruficollis*), caught at Kobe in Hyogo Prefecture, Japan in December 1995, died of a severe infection with *Eustrongylides tubifex* Jägerskiöld 1909 (Nematoda: Dioctophymatoidea). Numerous nematodes were found in the lumen of the proventriculus, attaching to the mucosa, and some were penetrating into muscle layer. Histopathologically, severe inflammation was found around the nematodes. *E. tubifex* may be one of factors contributing to the mortality of wild little grebes.

Key words: *Eustrongylides tubifex*, little grebe, Nematoda

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On December 7 1995, a young male little grebe (*Tachybaptus ruficollis*) was submitted to the veterinary hospital of Kobe Municipal Oji Zoo because of weakness and emaciation. This bird was captured at Kobe in Hyogo prefecture, Japan (135°10'E, 34°41'N), but the precise information of the caught site was unclear. In spite of some medical treatment with the agents of antibiotics and vitamins at the zoo hospital, the bird died two days after arrival.

Necropsy was performed 12 hours after death. The body weight was 121 g and the body condition was poor based on its pectoral muscle. Grossly, a large number of nematodes, ranging from 30~40 mm in length, were found protruding

into the lumen of the proventriculus. Some of them were penetrating deeply through muscle layer to the opposite serosa (Figure 1). The proventricular wall with nematodes was severely thickened and firm in consistency.

Proventriculus and liver were collected, and fixed in 10% neutral buffered formalin. A part of them were then embedded in paraffin wax, cut into 5 μm sections, and stained with hematoxylin and eosin. The rest of the fixed nematodes were removed from the proventriculus using a sharp knife and tweezers. As it was difficult to separate the nematodes within the wall of the proventriculus completely, fragmented parasites were separated and cleared in lacto

-phenol solution for morphological examination by light microscopy. The specimens were deposited in Meguro Parasitological Museum (4-1-1, Shimo-Meguro, Meguro, Tokyo 153, Japan) with the accession number of MPM-Coll. No.19701.

Histopathologically, thickened proventricular wall contained many nematodes. A moderate to severe inflammatory reaction consisting of granulocytes, lymphocytes, plasmacytes and macrophages was found around the nematodes (Figure 2). The mucosal epithelium, with invasion of nematodes, revealed marked erosion and infiltration of granulocytes and lymphocytes. Many parasitic granulomas or abscesses containing nematodes were also

observed in the muscle layer and subserosa with moderate fibrous reaction. The serosa of the proventriculus showed severe peritonitis.

Eustrongylides spp. (Dioctophymatoidea; Dioctophymatidae; Eustrongylinae) are commonly found in piscivorous birds such as herons, egrets and ducks [1-3]. It is supposed fishes may play an important role as transport hosts of *Eustrongylides* spp. [4-7]. At least 20 species of the genus *Eustrongylides* have been reported, but the classification were reexamined by Rautela and Malhotra [8] and Measures [9]. The nematodes isolated from an immature little grebe were similar to *E. tricolor* reported by Sugimoto [10] with its body length, copulatory bursa, and egg size.

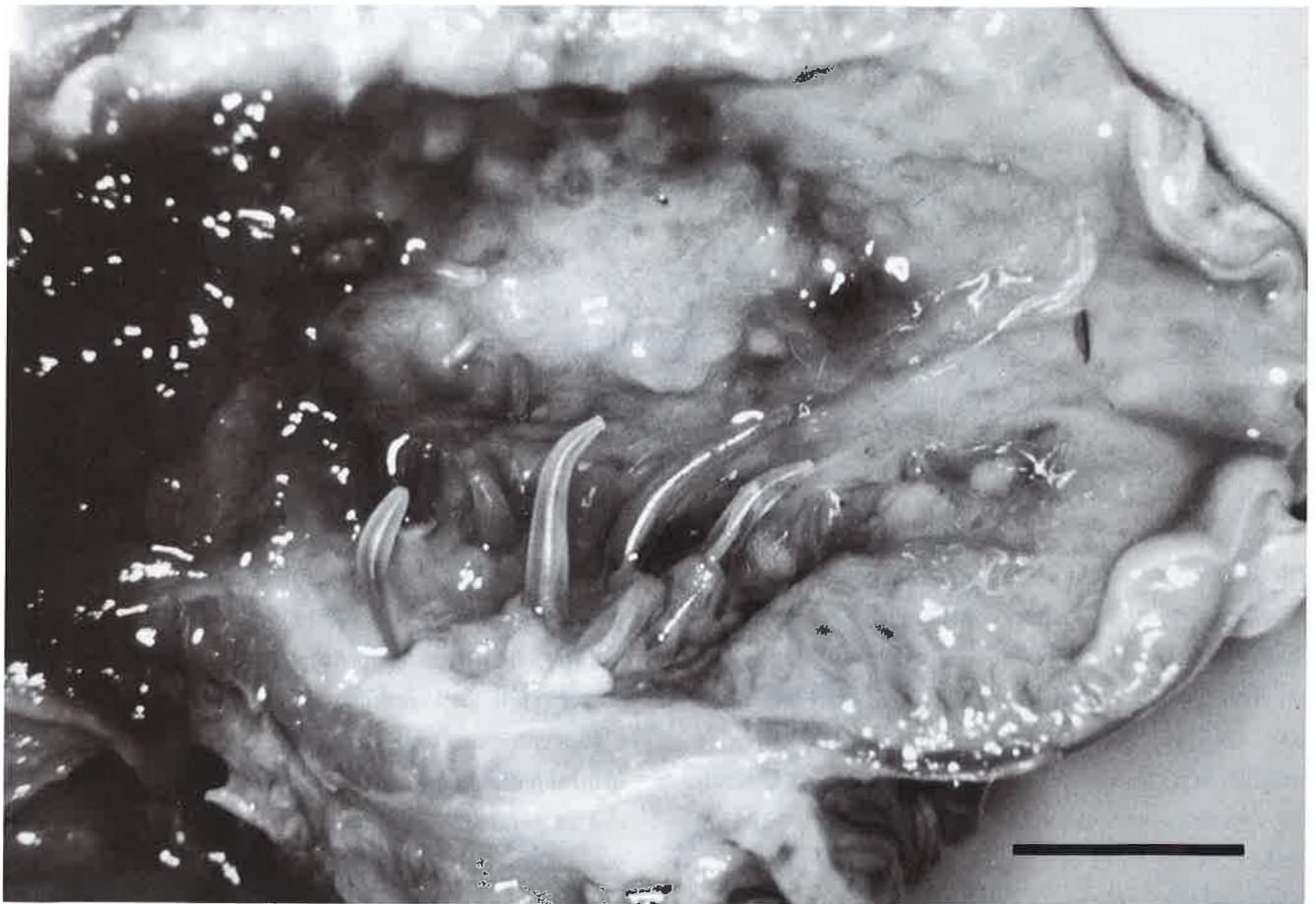


Figure 1.

The posterior or anterior end of the nematode parasites protruded into the proventricular lumen through the muscle layer from the proventricular serosa. Bar=3 mm.

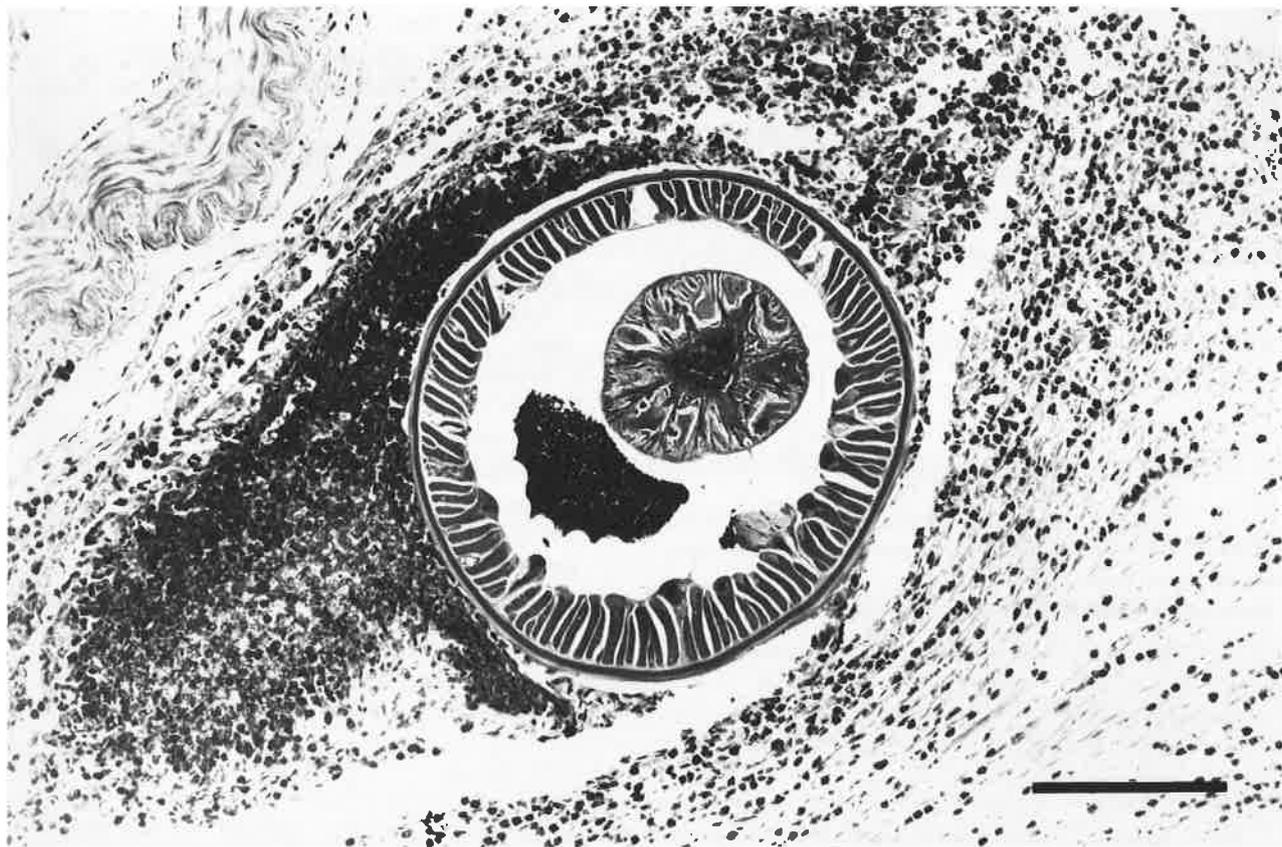


Figure 2.

A nematode penetrating into the subserosa. Severe inflammatory reaction was found around the nematode. H.E. stain. Bar = 100 μ m.

However, Measures [9] suggested *E. tricolor* is a synonym of *E. excisus* Jägerskiöld, 1909. The new specific identification by Measures [9] is based on the size and morphology of the labial papillae of the inner and outer circles. As the papillae of the present specimens were unclear by light microscopic observation, more precise study under a scanning electron microscope was done, and this was identified as *E. tubifex* Jägerskiöld, 1909 in order to investigate anterior extremity with the papillae in two circles [11].

Fatal cases of eustrongylidosis in North American Ciconiiformes has been frequently reported [6, 7, 12, 13] and other fish eating birds has been well documented [2].

A few cases of *Eustrongylides* spp. infection and its path-

ogeny in Japanese wild birds has been reported [14, 15]. There is only one report of *E. elegans* infection in the birds belonging to the order Podicipediformes from Lake Biwa, Japan [16], but the lesions were not mentioned. The little grebe inhabits lakes and ponds and breed in Japan except the northern areas [17]. They feed on insects, larvae, molluscs, and small fish [18]. As the parasites were mature and eggs were detected from the female, it suggests that the little grebe may be a definitive host of *E. tubifex* and the infection probably occurs after feeding on infected freshwater fishes or invertebrates. Regarding the severe pathological changes in the proventriculus, it is supposed that the eustrongylid infection may be a fatal factor for the little

grebe in the wild.

要 約

野生カイツブリ (*Tachybaptus ruficollis*) 一羽が兵庫県下で衰弱のために保護され死亡した。剖検により腺胃漿膜面に付着する多数の線虫 (*Eustrongylides tubifex*) が認められ、筋層を貫通して内腔に頭部もしくは尾部を露出していた。病理組織学的には線虫が侵入した周囲組織に炎症性細胞浸潤を伴う高度な病変が認められ、本線虫寄生が野生における死因のひとつになっていると推察された。

キーワード: *Eustrongylides tubifex*, カイツブリ, 線虫

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