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Natural Infections of *Clinostomum complanatum* (Trematoda: Clinostomatidae) in Wild Herons and Egrets, Tottori Prefecture, Japan

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ABSTRACT: *Nycticorax nycticorax, Ardea cinerea, Egretta garzetta,* and *Egretta intermedia* were naturally infected with *Clinostomum complanatum* (Trematoda: Clinostomatidae) among fourteen wild herons, seven wild egrets and one wild bittern evaluated at the Veterinary Hospital of Tottori University, Tottori, Japan. The latter three species of heron and egrets are reported for the first time as definitive hosts of this parasite in Japan.

Key words: Clinostomum complanatum, natural infection, *Nycticorax, Egretta, Ardea,* wild herons, wild egrets, Japan.

Adult *Clinostomum complanatum* are found in the oral cavity and pharynx of many fish-eating birds. While a few species of the birds have been recorded as definitive hosts of this fluke in Asia (Lo et al., 1981), only night herons, *Nycticorax nycticorax* have been identified as definitive hosts in Japan (Yamaguti, 1933; Kagei et al., 1988). Four human cases of *C. complanatum* infection have been reported in Japan (Yamashita, 1938; Hirai et al., 1987; Umegai et al., 1990; Yoshimura et al., 1991). Adult flukes were recovered from the pharynx of the patients. Our objective was to determine the prevalence of *C. complanatum* among herons, egrets and bittern from a site in Japan.

From April 1987 to March 1991, 22 birds from the eastern part of Tottori Prefecture (134°00′ to 134°50′E, 35°10′ to 35°35′N) were brought to the Veterinary Hospital of Tottori University, Tottori, Japan: nine night herons, five grey herons (*Ardea cinerea*), five little egrets (*Egretta garzetta*), two intermediate egrets (*Egretta intermedia*), and one Chinese little bittern (*Ixobrychus sinensis*).

The herons, egrets and bittern survived between 1 and 35 days. Medical treatment was limited to treatment of injuries. No anthelminthic drugs were administered. The birds were fed fresh squid and small marine fish in the course of medical treatment; they never were fed any freshwater fish which could serve as second intermediate hosts of *C. complanatum*.

The complete digestive tract of each dead bird was examined for *C. complanatum* infection. The recovered worms were fixed in 70% alcohol under pressure of a cover glass, stained with Borax-carmine, dehydrated, cleared in xylene and mounted in balsam. Eggs were preserved in 10% formalin. These specimens were measured and observed by light microscopy. All the worms were identified as *C. complanatum*.

The worms were found in five of nine night herons, all five grey herons, two of five little egrets, and one of two intermediate egrets. No worms were recovered from the Chinese little bittern. Intensity ranged from 1 to 139, with a median of 6 worms per infected bird. Of 248 worms recovered from the pharynx of these birds, 210 were adult flukes with eggs in their uteri and uterine-sacs. The remaining 38 flukes were immature.

In the eastern part of Tottori Prefecture, six species of freshwater fishes were known as second intermediate hosts of *C. complanatum* (Aohagi et al., 1992). The birds in our study probably became infected with *C. complanatum* after feeding on infected fish in the area.

Many genera of birds have been re-

ported as definitive hosts of *C. complanatum* (Lo et al., 1982). All infected birds in this survey fell within those genera. However, three species of birds (*A. cinerea*, *E. garzetta*, *E. intermedia*) are recorded as definitive hosts of *C. complanatum* for the first time in Japan.

Representative specimens were deposited in the Laboratory Animal Research Center, Tottori University School of Medicine, Japan (CA8704001–9072003).

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