CRYPTOSPORIDIOSIS AMONG BIRDS AND BIRD HANDLERS AT ZOO NEGARA, MALAYSIA

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Abstract. This study was carried out at the Malaysian National Zoo to ascertain, not only the current prevalence rate in the birds, but also to determine the association between cryptosporidiosis in birds and the bird handlers. A total of 116 fecal samples from 71 species of birds were collected from six different locations in Zoo Negara, and eight fecal samples from bird handlers were also sampled. Results showed that the prevalence of Cryptosporidium oocysts in birds and bird handlers were 3.4% and 12.5%, respectively. The birds that were positive for cryptosporidiosis were Wreathed Hornbill (Aceros undulatus) and Great Currasow (Crax rubra) from the aviary, Bushy-crested Hornbill (Anorrhinus galeritus) from the bird house, and the Common Peafowl (Pavo cristatus) from the lake. Birds at the lake showed the highest percentage (12.5%) of positivity, followed by birds at the aviary (5.4%) and the birdhouse (2.8%). Result of the present study seemed to indicate that cryptosporidiosis might be spreading to other species of birds and to other locations in the zoo, which was not previously documented. This study also suggested the probable association of cryptosporidiosis among birds and their bird handlers. However, conclusions can only be drawn after the confirmation of speciation found in birds and bird handlers through molecular identification.

INTRODUCTION

Cryptosporidium is a ubiquitous enteric protozoan pathogen that infects humans, and domestic and feral animals, worldwide. It is an important causative agent of diarrheal disease in humans, leading to significant morbidity and mortality in both developing and developed countries. Cryptosporidiosis, a disease caused by Cryptosporidium, was first described in the ceca of chickens by Tyzzer in 1929 (Sterling and Arrowood, 1978; Current, 1989). Subsequently, a report in 1955 described structurally similar parasites in turkeys, and these parasites were later named C. meleagridis (Slavin, 1955). In 1986, Current et al (1986) isolated and described an organism from chickens and gave the name C. baileyi to the species.

Currently, there are 16 species of Cryptosporidium that have been identified as having different morphologies and hosts (Xiao et al, 2004). Cryptosporidium species that have been described in birds include C. meleagridis, C. baileyi, and C. galli (Awad-el-Kariem et al, 1997). Only C. meleagridis, which infects turkeys and parrots, is a known threat to humans. Nevertheless, C. baileyi is probably the most common avian Cryptosporidium species because it is able to infect chickens, turkeys, ducks, cockatiels, quails, and ostriches; whereas, C. galli, the latest addition to the family, infects hosts such as finches, domestic chickens, capercaillie, and pine grosbeaks (Xiao et al, 2004).

In birds, Cryptosporidium sp has not only been reported in chickens (Sterling and Arrowood, 1978), turkeys (Srteer and Varga, 1999), quails, pheasants, peafowl, janglefowl, ducks, geese, parrots, pinches, lovebirds, budgerigars, ostriches (Morgan et al, 2001), catercaille, and pine grosbeaks (Xiao et al, 2004); but also the wrinkled hornbill found in Malaysia (Rohela et al, 2005). Avian cryptosporidiosis can manifest as respiratory (Dhillon et al, 1994) and intestinal (Lindsay and Blogbum, 1990) diseases. In some cases, cryptosporidiosis might even manifest as renal disease, which can be fatal (Hoerr et al, 1986).

The association between cryptosporidiosis in animals and animal handlers is a topic of interest. In 1981, a case of cryptosporidiosis in an animal handler was reported (CDC,