

Cochlosoma Infection in Finches

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Introduction

Cochlosoma spp. are protozoan parasites found in the digestive tract of birds, bats and more recently shrews (Watkins et al 1989). Avian infections have been reported in ducks, geese (Travis 1938; Pecka 1991), turkeys (McNeil and Hinshaw 1942), coots (Kulda and Nohynkova 1978) and in Lady Gould finches (*Chloebia gouldiae*) and Bengalese finches (*Lonchura domestica*) (Macwhirter 1994).

Prevalence

In an ongoing survey where finches in pet shops are randomly selected and faecal tested, Bengalese, Red-headed parrot finches (*Erythrura psittacea*) and Blue faced parrot finches (*Erythrura trichroa*) were found to be most commonly infected with *Cochlosoma* (Table 1). Our survey results have extended the known host range for *Cochlosoma* to include parrot finches, Zebra finches (*Peophila guttata*) and painted firetail finches (*Emblema picta*).

Table 1. The prevalence of *Cochlosoma* in pet shop finches.

Host Species	Number tested	Number positive
Bengalese finch	50	33
Red-headed parrot finch	7	6
Blue faced parrot finch	3	3
Zebra finch	79	2
Painted firetail finch	17	2
Lady gould finch	14	0

Other species of finches tested in the survey but have not to date shown *Cochlosoma* are eighteen Goldfinches (*Carduelis carduelis*), eight Greenfinches (*Carduelis chloris*), seven Black-headed munias (*Lonchura malacca atricapilla*), six Star finches (*Neochmia ruficauda*), four Chestnut breasted mannikins (*Lonchura castaneothorax*), four Plum headed finches (*Aidemosyne modesta*), four Cordon bleus finches (*Uraeginthus* spp.) and three Diamond firetail finches (*Emblema guttata*). In another study, no *Cochlosoma* was seen in several hundred wild caught Goldfinches from Victoria.

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Route of infection

Infections are thought to be acquired orally as they are not uncommonly seen in young birds being fed by infected parents or infected foster parents, such as Lady Gould chicks being fed by Bengalese. Young birds are most susceptible, while adult birds appear resistant to infection although they may commonly act as carriers. In a small trial, three adult Zebra finches did not become infected when kept with a heavily infected Bengalese finch for two months in a small cage.

Clinical signs

Infected adult birds are usually asymptomatic and in good condition although their droppings may be moister and bulkier than normal. In contrast, young birds less than 12 weeks of age exhibit clinical signs. Affected birds become lethargic, fluff up and pass moist, bulky droppings. Clinical dehydration becomes evident prior to death and high mortalities occur among nestlings. At necropsy, no macroscopic lesions are seen other than carcass dehydration. Histological examination of six heavily infected adult Bengalese finches in good condition showed no lesions in the alimentary tract, cloaca, liver, kidney, spleen and lung. Serial sectioning of the alimentary tract from the crop to the cloaca revealed organisms to be consistently present along the rectal and cloacal mucosa.

Diagnosis

Microscopic examination of wet mounts of fresh faecal material reveal the presence of numerous motile flagellates, each with 6 anterior flagella and a helicoidal, anterior ventral sucker. Protargol silver impregnation of samples collected from Bengalese and Painted firetail finches revealed the species to be *C. anatis*-like due to the presence of a short axostyle emerging posteriorly and an irregular dorsal cell surface (absent in other species).

Treatment

Drug trials were carried out on 50 adult finches with naturally occurring *Cochlosoma* infection. Host species included Red-headed parrot finch, Bengalese finch, Double barred finch (*Peophila bichenovii*), Zebra finch and Painted firetail finch. Birds were housed in standard wire-floored cages (34 x 44 x 52 cm) and fed finch seed (Golden Cob Premium Breeders Quality Finch Mix). Body weight was measured prior to dosing, using a mini electronic scale (Cenweight, Cenvet). For faecal examination, each bird was placed in a small cage and fresh droppings collected onto a clean piece of paper on the floor of the cage. Thin wet-mount preparations of the faecal portion of the bird's dropping were made and immediately examined by light microscopy. Faecal examinations were routinely conducted at the beginning and 7 days after the end of the treatment period and daily faecal examinations were performed on some birds until three consecutive negative results were obtained. Metronidazole (Flagyl S suspension, 40 mg/ml, Rhone-Poulenc Rorer Australia Ltd) was given at various dose rates by crop gavage or as medicated drinking water to eight groups of five finches each, as outlined in Table 2. Ronidazole (Ronivet-S, 60 mg/g, Vetafarm, Wagga Wagga, NSW), as a 60 mg/L solution, was given as drinking water for seven days to 10 finches. The medications were made up fresh each day.

Table 2. The efficacy of metronidazole and ronidazole in finches with cochlosoma infection

Drug	Route	Dose	Dosing period (day)	No. Negative/ No. Treated
Metronidazole	Crop gavage *	179 mg/kg	3	5/5
		167 mg/kg	1	5/5
		65 mg/kg	1	5/5
		29 mg/kg	1	5/5 #
Metronidazole	In water	2000 mg/L	3	5/5
		400 mg/L	3	5/5
		80 mg/L	3	5/5
		40 mg/L	3	5/5 #
Ronidazole	In-water	60 mg/L	7	10/10 #

* given once daily

checked daily until three consecutive negative results were obtained

Metronidazole and ronidazole were found to be very effective against *Cochlosoma* in finches (Table 2). Metronidazole was effective at doses as low as 29 mg/kg body weight given once by crop gavage or at 40 mg/L of drinking water for three days. All birds ceased passing flagellates by 24 hours after a single oral dose of metronidazole at 29 mg/kg body weight. With in-water medication at 40 mg of metronidazole/L, 3/5 birds were negative by 24 hours after the start of treatment and the remaining 2 became negative by 48 hours. No toxicity was observed when metronidazole was given at 179 mg/kg body weight daily for three days by crop gavage or at 2000 mg/L of drinking water for three days. All the finches given ronidazole became negative for *Cochlosoma* by 24 hours after the start of treatment. These results indicate that metronidazole or ronidazole can be used to treat asymptomatic infections in adult carrier birds. The efficacy of treatment in clinically affected juvenile birds remains to be determined.

The environment should be decontaminated by instituting strict hygiene. The organism is sensitive to most disinfectants. All feed should be discarded and replaced with a fresh supply once treatment has started. The organism most likely can survive in water and damp areas around water containers but is sensitive to desiccation and cyst formation has not been reported. Water containers should be regularly cleaned and all moist areas kept dry.

Prevention

Prevention is based on maintaining the above protocol and prophylactically treating or faecal testing all new birds brought into the aviary, especially Bengalese and parrot finches.

Acknowledgment

This work was funded by The Queensland Finch Society Inc. and from public donations. The finch seed fed was kindly donated by Ridley Agriproducts Pty Ltd.

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