
PREVALENCE OF PIGEON CAPILLARIASIS IN MAIDUGURI, NIGERIA

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ABSTRACT

The prevalence of Capillaria species among locally domesticated pigeons (Columba livia) was investigated in Maiduguri. Intestinal contents from one hundred pigeons examined for capillariid nematodes and ova revealed a prevalence of 9.0%. Two species of Capillaria were identified as Capillaria obsignata with 77.8% prevalence and Capillaria caudinflata with 22.2% (p < 0.05). Among the pigeons examined the young ones were significantly (p < 0.05) more infected 6(15.0%) than the adults with 3(5.0%), while the difference in infection rates between male and female pigeons was insignificant (p > 0.05). Capillaria caudinflata presented a larger egg size of 56.0µm x 23.0µm while C. obsignata had the smaller size of 50.5µm x 24.0µm and the shell had a reticulate pattern compared to C. caudinflata with a thick finely sculptured shell. This study provides information on the prevalence of Capillaria species of pigeon in Maiduguri, Nigeria.

Keywords: Prevalence, *Capillaria obsignata*, Capillariosis, Pigeon, Maiduguri, Nigeria

INTRODUCTION

Capillaria Zeder 1800, is a genus of parasitic nematodes, causing capillariosis in domesticated animals and poultry. They are generally host specific with clinical disease most common in birds such as pigeon, geese, chicken, guinea fowl, duck, and pheasants showing chronic gastro-enteritis with emaciation and death (Merck's Veterinary Manual, 1987).

Borno State has a large population of pigeons kept as domesticated birds, and is of great economic importance, considering that it is an edible bird, and utilized for game and ornamental purposes (Pinto *et al.*, 2004). In Maiduguri metropolis, for example, pigeons are either on free range or under semi intensive management. Under the latter they are usually kept in nest boxes housing 2 – 3 birds/box while in other instances a large number may be kept under a roof (Fly-pen), specially designed for

birds (Nohl-Green and Wagner 1977; Biu *et al.*, 2005).

There is dearth of information on the prevalence of capillariosis in pigeon in Maiduguri hence the need for this study which will enhance methods useful for its control in flocks in order to improve their productivity.

MATERIALS AND METHODS

Digestive tract contents of slaughtered pigeons purchased from the Maiduguri Monday Market were examined in the Veterinary Parasitology Laboratory, University of Maiduguri for *Capillaria* nematodes and eggs. The digestive tracts were opened with the aid of a scissors, in separated Petri dishes containing 0.85 Physiological saline solution (PSS). The mucousa were scraped with microscopic slides and after, the nematodes were collected with the aid of a thin brush, rinsed in the same solution and fixed in A.F.A (Alcohol 70° GL , 93ml; Formaldehyde 5ml,

Acetic acid 2ml) as described by Pinto *et al.* (2004). The recovered nematodes stained with alcoholic chloride carmine, dehydrated in an ethanol series (70 – 100%), cleared in phenol and mounted in balsam and identified as described by Soulsby (1982). Mucosal scrapings using the floatation technique of saturated sodium chloride solution were examined capillariid ova at x40 objective of the microscope. Eggs were identified based on their sizes measured using a mechanical stage fitted vernier scale as described by Bush (1975) and morphology as described by Soulsby (1982).

Differences in the prevalence of infection between the pigeons examined based on their sex and age were analyzed statistically using the students' "t" –test with "p" values equal to or less than 0.05 regarded as significant (Compell, 1986).

RESULTS

The results of this study have shown that from a total of 100 pigeons examined, 9(9.0%) of them were infected with *Capillaria* species. Young pigeons were more significantly ($p < 0.05$) infected 6 (15%) compared to the adult with 3 (5.0%) while difference between the male and female pigeons was insignificant ($p > 0.05$) (Table 1). The species were identified as *C. obsignata* and *C. caudinflata* with prevalence rates of 77.8% and 22.2% respectively ($p < 0.05$) (Table 2). *C. obsignata* eggs were slightly smaller (50.5 x 24.0 μm) and the shell has a reticulate pattern compared with that of *C. caudinflata* which measured 56.0 x 23.0 μm with a thick finely sculptured shell.

Table 1: Prevalence of *Capillaria* species based on the sex, age and the month of study of the pigeons examined

Total examined	Number	% infected
All pigeons:	100	9 (9.0)
Sex: Male	48	3 (11.5)
Female	52	6 (11.5)
Age: Young	40	6 (15.0)
Adult	60	3 (5.0)

DISCUSSION

The domesticated pigeons (*Columba livia*) used for this study were raised mainly on free range, with access to the ground, which readily exposes them to *Capillaria* infection (Ruff, 1978), hence the prevalence of 9% in this study area. *Capillaria obsignata* possessed a smaller egg in this study which agrees with the report by Soulsby (1982), who also stated that with a direct life cycle, it is a very important parasite of pigeons in the tropics, and present severe symptoms of diarrhoea, weakness, weight loss, huddling, and could cause paralysis of the small intestine.

Table 2: Prevalence of *Capillaria* species isolated from domesticated pigeons examined and their egg sizes in micro meters

<i>Capillaria</i> species Isolated	Egg size (L x B) (μm)	Number of pigeons infected (%)
<i>C. obsignata</i>	50.5 x 24.0	7(77.8)
<i>C. caudinflata</i>	56.0 x 23.0	2(22.2)

This study also revealed that young pigeons were more commonly infected compared to the adults which agrees with the report by Wehr (1971) and Soulsby (1982) that young and growing pigeons are mostly affected due to lack of acquired immunity, but infection can also occur in older pigeons, which also act as carriers, and an important source of infection for other avian hosts (Parsani *et al.*, 2006).

Poor drainage and ventilation inside pigeon pens, and feeding on the ground have been associated with capillariasis, and thus control depends on general hygiene (Permin *et al.*, 1997).

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