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Trichomonas gallinae INFECTIONS IN THE RINGDOVE *(Streptopelia risoria)*

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Abstract: Twenty *Trichomonas*-free ringdoves *(Streptopelia risoria)* were intubated with *Trichomonas gallinae* derived from pigeons *(Columba livia)*. By 15 days post-intubation (DPI) five doves had *T. gallinae*-type lesions *(Cankers)* in the pregastric portion of the digestive system, and six doves had *T. gallinae* present without lesions. Sixteen *Trichomonas*-free ring doves were infected using *T. gallinae* from axenic cultures. By 21 DPI four doves had *T. gallinae* lesions and died, and one dove had *T. gallinae* present without lesions.

This is the first report of *T. gallinae* lesions in ring doves since Cauthen reported it in 1936.

INTRODUCTION

Trichomonas infections in ringdoves *(Streptopelia risoria)* were reported by Cauthen[1] in 1936. Subsequently, Kocan[2] in 1975 and Stabler[4] in 1977 were unable to obtain *Trichomonas gallinae*-type lesions (cankers) in such doves given the virulent Jones' Barn strain of *T. gallinae*. This led Stabler[4] to state " . . . that the ringed turtle dove is an extremely resistant columbid to even the most virulent strain of *Trichomonas gallinae*."

Several casual attempts by us to pass *T. gallinae* from infected pigeons to uninfected ringdoves were unsuccessful, and this led to the transmission studies reported herein.

MATERIALS AND METHODS

Ringdoves of several ages were obtained from the colony maintained by Dr. Wilmer Miller, Department of Genetics, Iowa State University. All these birds were negative for *T. gallinae* by microscopic examination of wet-amount smears of throat swabs. Miller (pers. comm.) indicated that he has never had "canker" in the doves during 20 years of maintaining the colony. All birds were kept in stainless steel cages with stainless steel bars on the floor.

Trichomonas gallinae were obtained from pigeons *(Columba livia)* in a large colony maintained by the second author. Pigeons with lesions caused by *T. gallinae* were examined at necropsy. Parasites were scraped from the lesion and suspended in a 0.9% NaCl solution. No attempts were made to eliminate bacterial, fungal or viral contaminants. The mixture containing parasites was intubated into the crop of ringdoves. The presence of parasites was determined by microscopic examination of throat swabs. Birds containing parasites were examined at necropsy at the termination of the experiment or when they died. The parasites were subsequently maintained by serial passage in ring doves.

The techniques and culture medium of Diamond[2] were used to establish axenic cultures of *T. gallinae*. The inocula were obtained from infected ringdoves.

Experiment 1: Ten doves were fed cracked corn only, and 10 doves were fed commercial pigeon pellets only. Each bird was intubated with about 5×10^5 parasites (determined by using a hemocytometer). Six additional doves were fed only cracked corn and six doves were fed only the pellets. Each control bird was intubated with 1.0 ml of 0.9% NaCl without parasites. The experiment was

terminated 15 days post-intubation (DPI).

Experiment 2: Sixteen doves were intubated with 1.0 ml of the culture medium containing the parasites. The medium had been inoculated three days prior to intubation and the number of parasites was not determined. The doves were fed commercial pellets, and the experiment was terminated 21 DPI.

RESULTS

Experiment 1: One of the birds fed cracked corn died at 13 DPI with a large *T. gallinae*-type lesion (canker) at the base of the mouth; two had well-developed lesions in the upper esophagus; five contained parasites, but did not develop lesions; and two did not have parasites.

One of the birds fed pellets died at 14 DPI and had a *T. gallinae* infection in the mouth; one had a lesion in the esophagus; one contained parasites, but did not develop lesions; and seven did not have parasites.

All doves in the two control groups were negative for *T. gallinae* at the end of the experiment.

Experiment 2: Four of the birds intubated with *T. gallinae* from axenic cultures died prior to the termination of the experiment and these had *T. gallinae* lesions in the mouth or esophagus; one contained parasites but no lesions; and 11 did not have parasites.

In all cases where lesions were found, the parasites were present. All birds that developed lesions as a result of infection with *T. gallinae* became considerably emaciated.

DISCUSSION

This study indicates that ringdoves can become infected with *T. gallinae* as Cauthen[1] reported. Koch's Postulates have been fulfilled, and it appears that *T. gallinae* is the causative agent of the lesions. In the experiments described here, all lesions were in the pregastric areas of the digestive system. However, while maintaining the parasite by serial passage in doves, we have noted one *T. gallinae* lesion in the liver, and two lesions in the lungs. Although our experiments indicate that *T. gallinae* can infect ringdoves, the experiments indicate that some ringneck doves are resistant or immune to infection. Studies on the cause of this resistance are needed.

No conclusions can be made about the affects of diet on the development of infections. More studies are needed to ascertain if there is a difference in rate of infection in birds fed corn or commercial pellets.

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