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Author: STABLER, ROBERT M.

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EFFECT OF VIRULENT *Trichomonas gallinae* ON THE BAND-TAILED PIGEON*

ROBERT M. STABLER, Colorado College, Colorado Springs, Colorado 80903, USA

CLAIT E. BRAUN, Wildlife Research Center, Fort Collins, Colorado 80521, USA

Abstract: Nine *Trichomonas*-free band-tailed pigeons (*Columba fasciata fasciata*) trapped in Colorado died from experimental infection with Jones' Barn *Trichomonas gallinae* 7.1 days (av.) post-inoculation. Three experimentally infected domestic pigeons (*C. livia*) used as controls died 5.7 days (av.) post-inoculation. Three band-tailed pigeons from Colorado naturally infected with avirulent *T. gallinae* did not produce sufficient antibody to protect them from virulent *T. gallinae*. Trichomonads obtained from a fatal case of trichomoniasis in a band-tailed pigeon from California killed a band-tailed pigeon from Colorado; they did not kill five domestic pigeons but did induce severe oral caseation.

INTRODUCTION

Twenty-one of 109 (19%) band-tailed pigeons (*Columba fasciata fasciata*) trapped in Colorado were infected with *Trichomonas gallinae*, but none showed evidence of disease.[3] Sileo and Fitzhugh[1] did not find lesions in 259 band-tailed pigeons from southern Arizona, though they reported the death in 5 days of one bird administered virulent *T. gallinae* in the laboratory. They found trichomonads in 6 of 60 live-trapped band-tailed pigeons and 2 of 96 birds killed by hunters. Furthermore, one of us (C.E.B.) examined some 30,000 band-tailed pigeons trapped in Colorado from 1969 through 1974 and noted no lesions.

In contrast, band-tailed pigeons (*C. f. monilis*) from the Pebble Beach area in California (F. J. Ward, pers. comm.) are occasionally found moribund or dead of extensive, blocking caseation of the head and upper neck, accompanied by *T. gallinae*. Also, Stabler and Herman[4] reported that as early as 1945 oral lesions interpreted as being caused by *T. gallinae* were observed in band-tailed pigeons from Monterey and Inyo Counties, California.

EXPERIMENTAL DATA

Thus, band-tailed pigeons from populations in the Interior appear to be more resistant to virulent *T. gallinae* than those from California. To test this possibility a series of young band-tailed pigeons (up to 6 weeks of age) was trapped near Colorado Springs, Colorado and exposed to the virulent Jones' Barn (JB) strain of *T. gallinae*. This strain usually produces mild oral lesions, but severely attacks the thoracic and abdominal viscera (especially the liver) of uninfected, nonimmune domestic pigeons (*C. livia*).

Nine uninfected band-tailed pigeons from Colorado were given per os 5,000-10,000 JB trichomonads. They died on post-inoculation days 4-17 (av. 7.1) with extensive liver lesions, but little or no oral caseation. Also three infected domestic pigeons used as controls died, one on day 5 and two on day 6 with liver destruction typical of JB trichomoniasis. Therefore, band-tailed pigeons from Colorado had no more resistance to JB *T. gallinae* than domestic pigeons and died with similar lesions.

Stabler[2] reported that infection in domestic pigeons with mild strains of *T.*

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gallinae resulted in considerable protection against the JB strain; oral caseation might occur, but death was uncommon. Accordingly, JB trichomonads from the liver of one of the above dead band-tailed pigeons were placed per os in a naturally infected band-tailed pigeon. Severe oral caseation developed and just prior to death it was treated with Emtryl.[5] Before treatment, however, this bird's trichomonads were placed in another naturally infected band-tailed pigeon from Colorado. The latter bird died on day 7 with extensive caseation in the mouth and liver. The treated band-tailed pigeon, now uninfected, was inoculated with JB flagellates. It died on day 27 with occluding oral caseation and a non-infected liver. Sufficient immunity had developed in this bird during its prior exposure to JB trichomonads to noticeably influence the course of the second infection. No liver lesions developed, but the bird experienced severe caseation, and lived an unusually long time following infection (27 days).

On 24 September 1974 we received a moribund band-tailed pigeon from Pebble Beach, California (courtesy of F. J. Ward). It died in 2 days with a mass of caseation in the mouth and upper neck. Its saliva was swarming with *T. gallinae*. A band-tailed pigeon from Colorado naturally infected with *T. gallinae* was treated with Emtryl and then given trichomonads from this bird. It died on day 20 with caseation completely filling the mouth, appearing on the floor of the crop, and extending two-thirds down the proventriculus. A small caseous lesion was present on the liver. Trichomonads from this bird's liver, and those from the mouth of the band-tailed pigeon from California, were placed per os in five uninfected domestic pigeons. All presented severe oral caseation for 15 days; none died and no hepatic lesions were found at necropsy. Trichomonads from the Pebble Beach bird killed not only the bird from California, but also a band-tailed pigeon from Colorado. They produced temporary, though severe, disease in domestic pigeons.

In conclusion, band-tailed pigeons from Colorado are quite susceptible to virulent *T. gallinae* and, unlike the domestic pigeon, current or prior infection with avirulent *T. gallinae* does not confer adequate protection against virulent strains. In the Pebble Beach area of California there is a strain of *T. gallinae* virulent for band-tailed pigeons in Colorado and California. In contrast, the strains of this parasite occurring naturally in band-tailed pigeons from Colorado appear thus far to be avirulent.

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