LUNG ACARIASIS IN NORTHERN CALIFORNIA GROUND SQUIRRELS

Authors: LEE, DWAYNE, and DUTSON, VAL J.

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A mite was found in the lung tissue of a ground squirrel, *Citellus beecheyi douglasii* (Richardson), during an examination for internal parasites. Subsequently, a special attempt was made to gather information concerning the mite. This paper reports the incidence of infection in two ground squirrel populations and associated pathologic changes in the lung tissue.

The mites have been identified as *Pneumocoptes banksi,* a species first described in 1910 from *C. beecheyi* by Wellman and Wherry (Parasitology *3:* 417-422). To our knowledge, this mite has not been observed in ground squirrels since the original description. Weidman (1917, J. Parasitol. *3:* 82-89) described a similar species from a prairie dog, *Cynomys ludovicianus* (Ord), and Baker (1951, J. Parasit. 37: 583-586) revised the genus and described a species from *Peromyscus* sp.

Methods

Ground squirrels were either shot or live-trapped. The lungs were placed in physiologic saline and macerated with a Waring blender. The material was then centrifuged and the sediment examined under a dissecting microscope. Lung tissue for histologic examination was fixed in Bouin's, dehydrated in N-butyl alcohol and infiltrated with Paraplast.® Sections were cut at seven microns, and stained with Hematoxylin and Eosin.

Results and Discussion

Lungs were collected from 79 ground squirrels in two localities (Table 1); eight female squirrels were found infected. All positive animals were mature adults and were collected during the months of May, July, September (1968) and March 1969. In six animals, the total number of mites recovered ranged from two to 35. Over 100 mites were recovered from each of the other two squirrels. All of the lungs examined in this study appeared normal on gross inspection and no mites were observed macroscopically.

Histologic sections from heavily infected squirrel lungs reveal that the mites produce a reaction indicative of a foreign body type of bronchopneumonia. The reaction is characterized by a heavy infiltration of granulocytes. There is a diminished quantity of functional lung tissue with evidence of connective tissue proliferation and thickened alveolar walls. In some sections, large areas of tissue have coalesced with adjacent cyst-like formations which appear to be mite eggs. Mites are clearly visible in some sections (Fig. 1). They are found in alveolar spaces and are surrounded by a "halo" of clear space often bounded by a layer of granular cells and connective tissue.

According to Weidman (Op. cit.) the pathological picture of the prairie dog

TABLE 1. *Results of Squirrel Lung Examination for Mites.*

Subspecies	Locality	Number Examined		Number Positive	
		♂	♀	♂	♀
C. beecheyi douglasii (Richardson)	Mendocino Co., Calif.	8	19	0	7
C. beecheyi beecheyi (Richardson)	Monterey Co., Calif.	30	22	0	1

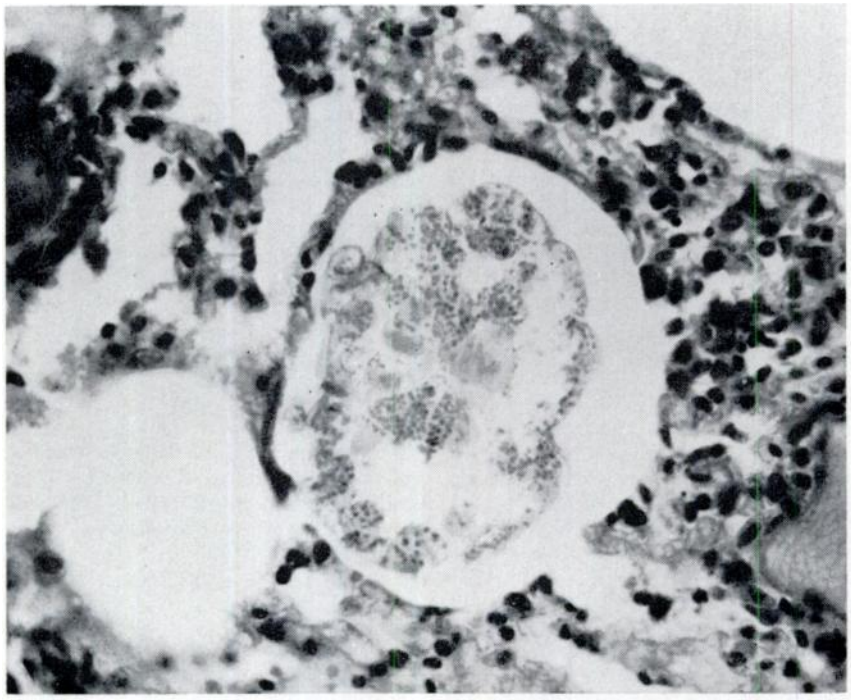

FIGURE 1. *Section of ground squirrel lung showing mite in alveolus. 400 X.*

lungs infected by similar mites was one of acute bronchopneumonia. The histologic picture in the present study indicates that heavily infected ground squirrels had an infection of long duration. At the present time, we can offer no explanation as to why only female ground squirrels were found to be infected nor as to the mode of transfer from squirrel to squirrel.

Summary

Eight of 79 *Citellus beecheyi* (Richardson), from Northern California were found naturally infected with the lung mite *Pneumocoptes banksi* (Wellman and Wherry, 1910). All infected animals were females. Histologic sections of lung tissue show that the mites induce a reaction indicative of chronic bronchopneumonia.

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DWAYNE LEE
Division of Parasitology
University of California
Berkeley, California 94720

and

VAL J. DUTSON
Bureau of Vector Control
and Solid Waste Management
California State Department
of Public Health
Berkeley, California 94704

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