



Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

Case #: 47 Month: August Year: 2014

Contributor: Mariola Penades Fons, DVM, PhD student from the CEU Cardenal Herrera University - Valencia, Spain.

History: One of several adult Bantam chickens found in a property in Southern California showed "feet deformities" (see macroscopic findings below) in addition to fleas around the eyes. No other significant gross abnormalities were observed during necropsy.



Answers:

1. Morphologic diagnosis
 - a. Skin: hyperkeratosis, orthokeratotic, diffuse, severe

2. Two possible etiologies

- a. *Knemidokoptes mutans*
- b. Avian Poxvirus

3. Histological features of each possible etiology

Knemidokoptes mutans (Figs. 1 and 2):

Diffuse, abundant, orthokeratotic hyperkeratosis. Mite tunnels: oval to elongate (35 to 100 μ m diameter) clear spaces within the keratin. Sections of arthropods, ranging from 125 to 500 μ m in diameter, with eosinophilic, spiny, chitinous exoskeleton, a hemocoel, striated muscle, and focal accumulations of deeply basophilic 2 μ m diameter nuclei. Scattered accumulations of brown, granular or globular material within the keratin tunnels (mite feces). Possible scattered aggregates of eosinophils, lymphocytes, plasma cells, heterophils and karyorrhectic debris (necrosis) within the keratin. Eosinophilic, heterophilic, lymphocytic, plasmacytic and/or histiocytic infiltration of underlying dermis.

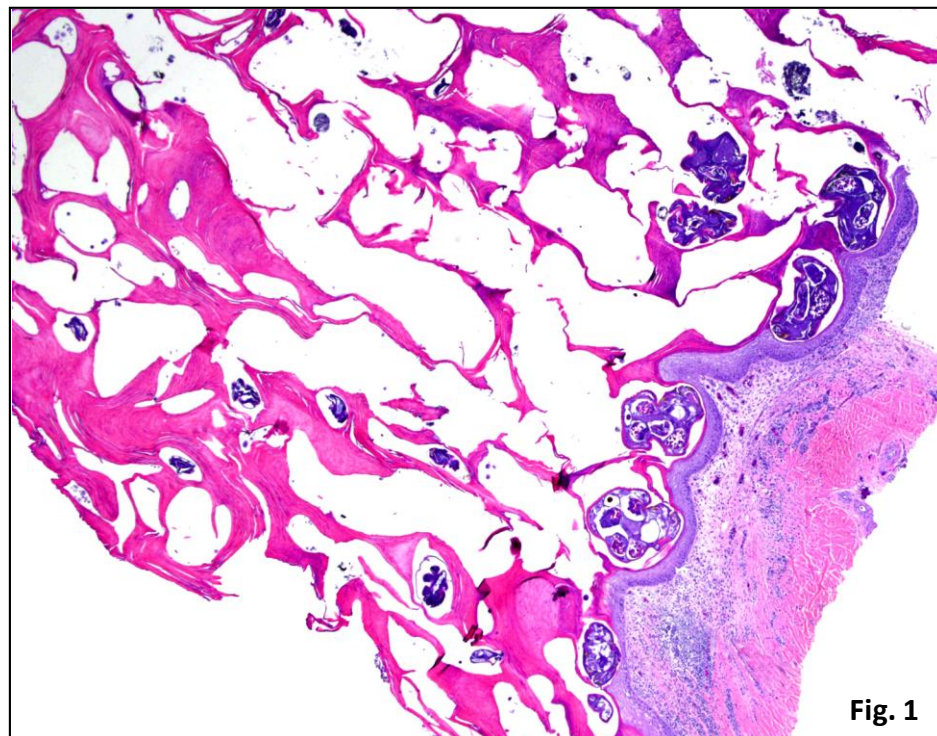


Figure 1: Microscopic image of the case of knemidokoptiasis shown grossly in this diagnostic exercise.

Notice abundant oval to elongated clear spaces (mite tunnels) within the keratin, containing several arthropods (125 to 500 μ m). HE 40x.

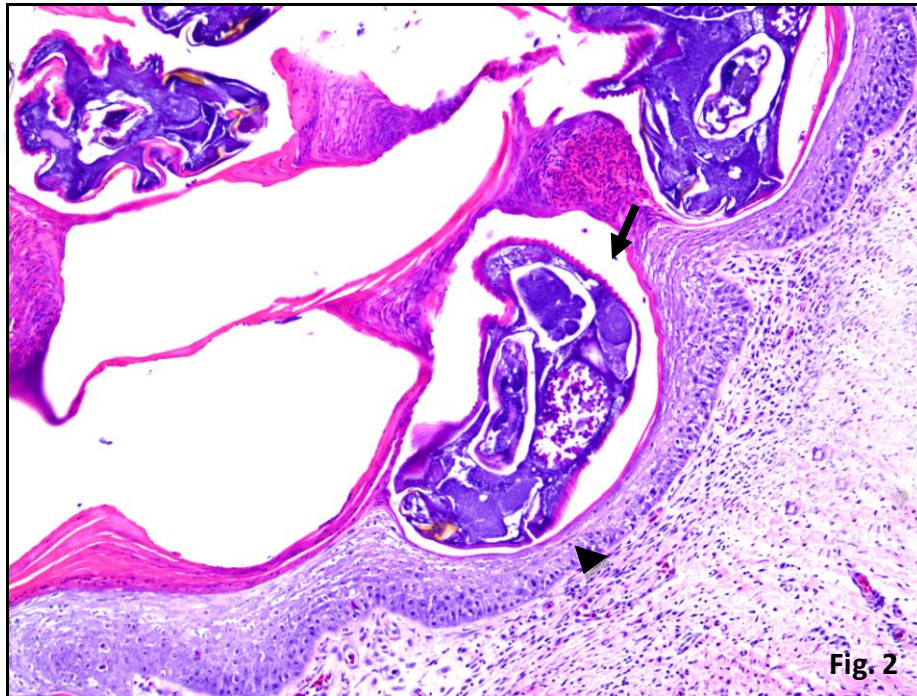


Figure 2 (higher magnification of Figure 1): Observe the details of the mites including the eosinophilic, spiny, chitinous exoskeleton (arrow), a hemocoel and a mouth part (arrowhead). Scattered aggregates of inflammatory cells and debris within the keratin, and diffuse inflammatory infiltrate in the underlying dermis are also present.

Avian Poxvirus:

Thickening of the stratum spinosum by large cells with cytoplasmic swelling and vacuolation (ballooning degeneration). Usually, epithelial disruption and hyperplasia. Also common: edema, fibrin, vascular dilation, perivascular mononuclear cell infiltrate and variable heterophilic infiltrate. Intracytoplasmic 15-30 μm eosinophilic inclusion bodies (Bollinger bodies).

Please send your comments/questions to the whole LCPG list by hitting "reply to all".

A final document containing this material with answers and a brief discussion will be posted on the C. L.

Davis website by the end of the current month (http://www.cldavis.org/lcpg_english.html).