

Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

Case #: 31 Month: April Year: 2013

Answer sheet

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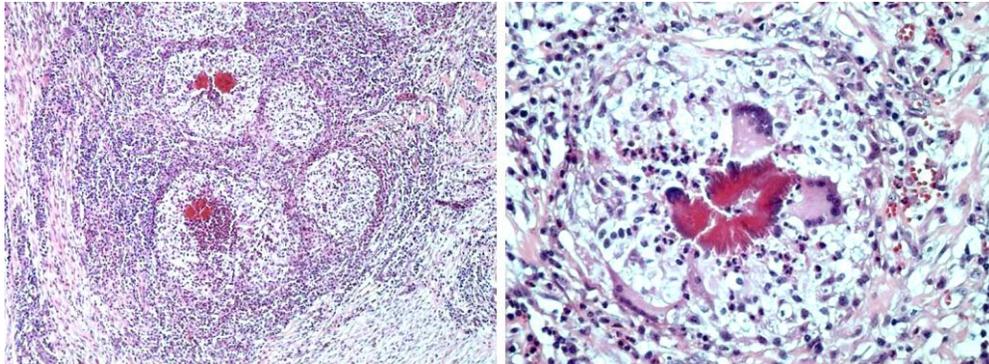
Clinical History: Several steers (approximately 2 years old) had proliferative and ulcerative lesions on the skin, mostly on the head, neck and flank regions. Skin biopsies were requested.



Answers: (a) **Gross morphologic diagnosis:** Focally extensive granulomatous and ulcerative dermatitis

(b) **Possible etiologies:** *Staphylococcus aureus*, *Actinobacillus lignieresii*, *Pasteurella multocida*

(c) **Histopathological findings:** Multifocal to coalescing pyogranulomas with fibrosis expanding the subcutis. Most of the granulomas have a center with eosinophilic, radiating, club-shaped material (Splendore-Hoepli reaction) surrounded by neutrophils and multinucleated giant cells (10 and 40x - H&E).



History

A dairy farm with approximately 60 calves in the south of Chile first reported a calf with numerous warty lesions in the skin. Shortly, other animals showed similar lesions. In around one year, approximately 50% of the animals showed skin masses in different body locations, but mostly in the head and neck. These lesions drained a yellowish suppurative material.

Laboratory results

Ten affected skin samples were obtained for bacterial tissue culture. *Pasteurella multocida* was isolated, which was sensitive to: Enrofloxacin, Cefoperazone, Cefuroxime, Ceftiofur, Gentamicin, Fluorfenicol and Danofloxacin.

Discussion

Botryomycosis is a chronic pyogranulomatous inflammation with granule formation, which can be caused by different types of bacteria. This infection is uncommon, and can damage skin and some internal organs (mainly lung) of different animal species (horses, ruminants, dogs, cats and humans). The term "botryomycosis" is not the most adequate, because of the confusion regarding the etiology of the disease. Nevertheless, nowadays this term is widely

accepted. Among bacteria associated with Botryomycosis, we can mainly find *Staphylococcus aureus*, plus other Gram positive and Gram negative bacteria, such as *Escherichia coli*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Streptococcus* spp., *Actinobacillus* spp., *Arcanobacterium pyogenes*, *Pasteurella multocida* and the recently described *Bibersteinia trehalosi*.

Microscopically, Botryomycosis is characterized by multifocal pyogranulomas with a core of bacteria and Splendore-Hoepli reaction embedded within abundant reactive connective tissue.

Animals received one dosage of a commercial product that contained Penicillin, Streptomycin and Dexamethasone. Treated animals showed improvement of lesions, but without complete resolution. Animals were then treated with Oxitetracycline (intramuscular) for 10 days, which resulted in the disappearance of the lesions with replacement by granulation tissue.

In this particular case, it seems that the first affected calf was the source of the infection to the herd. It is not clear how this disease affected approximately 50% of the animals of the farm. This farm had not received veterinary services until this outbreak, but a common practice of farmers in the repeated use of disposable materials (such as syringes and needles) which could have functioned as fomites. The bacterium isolated from these cases is currently under molecular investigation for proper and more specific identification.

REFERENCES:

Donovan GA, TL Gross. 1984. Cutaneous botryomycosis (bacterial granulomas) in dairy cows caused by *Pseudomonas aeruginosa*. *J Am Vet Med Assoc* 184, 197-199.

Padilla-Desgarenes C, D Vázquez-González, A Bonifaz. 2012. Botryomycosis. *Clin Dermatol* 30, 397-402.

Spagnoli S, TJ Reilly, MJ Calcutt, WH Fales, DY Kim. 2012. Subcutaneous Botryomycosis due to *Bibersteinia trehalosi* in a Texas Longhorn steer. *Vet Pathol* 49, 775-778.

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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).