



Diagnostic Exercise

From The Davis-Thompson Foundation*

Case #: 85 Month: October Year: 2017

Answer Sheet

Contributors: Peter Chu, DVM, Dip ACVP. University of California, Davis. California Animal Health and Food Safety Laboratory System.

Clinical History: Four-month-old female Alpaca cria. Owner reported the cria being “very stiff in the chest and body” shortly before death.

Necropsy Findings: The cria was in fair body condition with sparse amounts of reserve fat. The lungs were bilaterally red, wet, and rubbery.

Microscopic images:

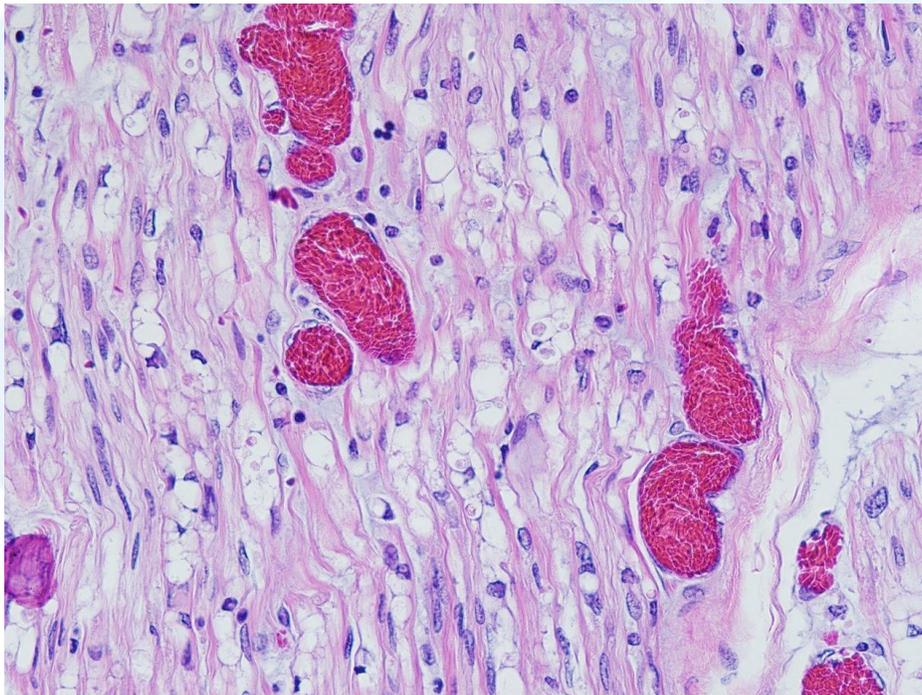


Figure 1. Alpaca cria. Phrenic nerve. Hematoxylin and eosin, 40x objective.

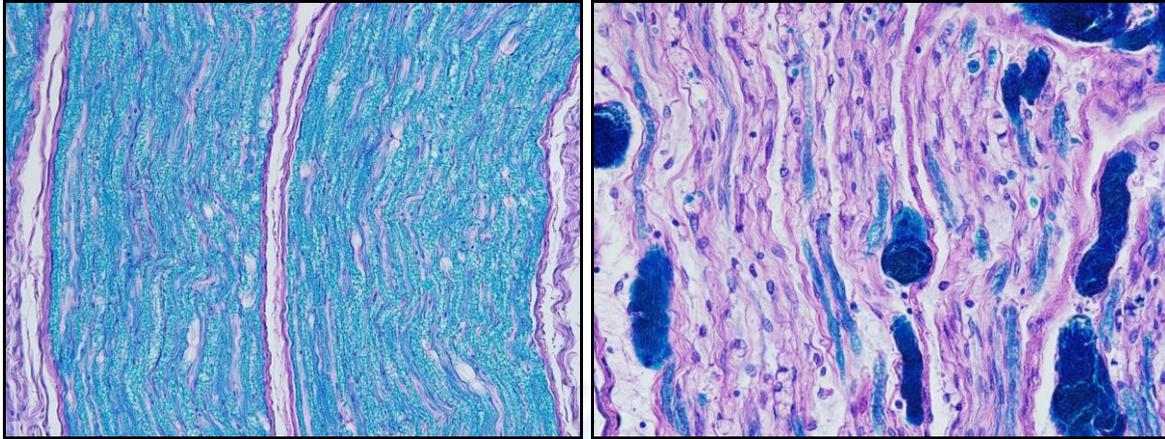


Figure 2. Alpaca cria. Sciatic nerve (left). Phrenic nerve (right). Luxol Fast Blue, 40x objective.

Diagnosis: Phrenic nerve, severe degeneration and demyelination with dilated myelin sheaths and digestion chambers and secondary atrophy of the diaphragm with variably myofiber size and mild multifocal myofiber necrosis and regeneration.

Typical microscopic findings:

- Phrenic nerve, degeneration with dilated myelin sheaths, swollen axons, digestion chambers, demyelination.
- Diaphragm, atrophy with myofiber size variation, centralized nuclei, rare nuclear rowing and pyknosis.

Discussion: Phrenic nerve degeneration is an idiopathic but recognized disease in New World camelids. The degeneration preferentially affects the phrenic nerve while sparing other long nerves (such as the sciatic nerve in this case). Degeneration of the phrenic nerve results in paralysis of the diaphragm causing respiratory distress and death. Histologic findings observed within the diaphragm are consistent with denervation atrophy of the myofibers. As was the case in this alpaca, degeneration of the phrenic nerve was more severe distally with variable degeneration observed proximally. In a few of the previously diagnosed cases, spinal cord lesions were observed but in the vast majority of cases an etiology could not be identified.

References:

- Bednice D, Mazan MR, Kuehn H, . Diaphragmatic paralysis due to phrenic nerve degeneration in a llama. J Vet Intern Med. 2002;16:603-606.
- Byers S, Barrington G, Nelson D, . Neurological causes of diaphragmatic paralysis in 11 alpacas (Vicugna pacos). J Vet Intern Med. 2011;25:380-385.
- F. A. Uzal, M. Mukai, L. Woods, R. Poppenga, B. A.Valentine, J. Smith, Acute Respiratory Distress in an Alpaca, Veterinary Pathology, 2012, 49, 6, 1070.

*The Diagnostic Exercises are an initiative of the **Latin Comparative Pathology Group (LCPG)**, the Latin American subdivision of The Davis-Thompson Foundation. These exercises are contributed by members and non-members from any country of residence. Consider submitting an exercise! A final document containing this material with answers and a brief discussion will be posted on the CL Davis website (http://www.cldavis.org/diagnostic_exercises.html).

Editor for this Diagnostic Exercise: Santiago Diab

Editor-in-chief: Vinicius Carreira