

DIAGNOSTIC EXERCISE

Contributor:

Milton M. McAllister, DVM, PhD, D-ACVP

University of Adelaide

milton.mcallister@adelaide.edu.au

Ph: 8 8313 7820

History

One of several emaciated adult black-faced Suffolk ewes from a ranch in Wyoming, USA.



1. Morphological diagnoses

- a. abomasal dilatation and impaction
- b. dilatation of omaso-abomasal orifice
- c. emaciation (note lack of omental and mesenteric fat)

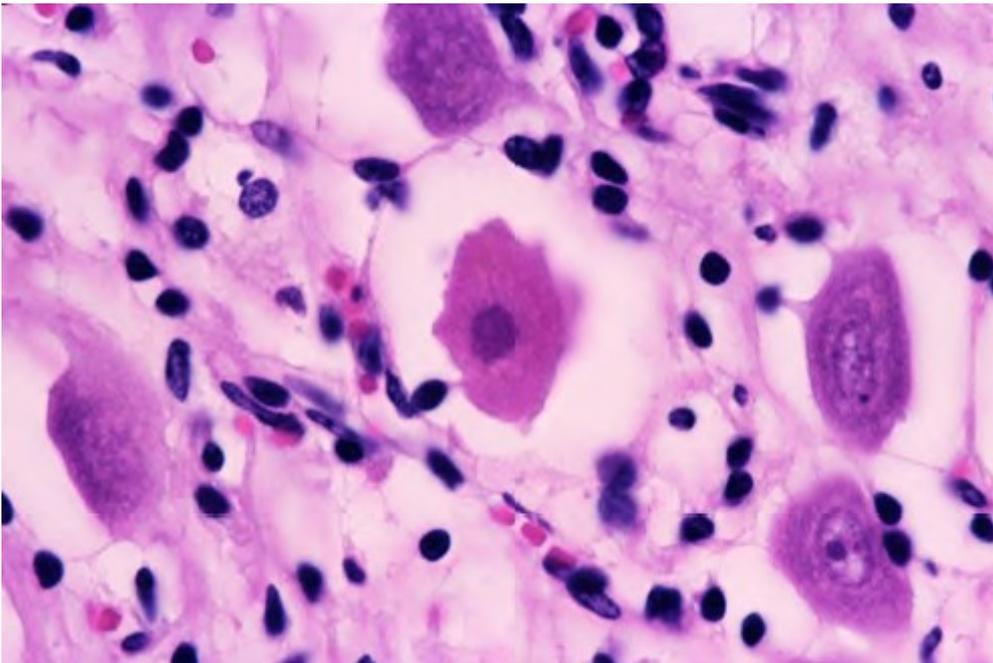


2. Name the disease

Abomasal Emptying Defect / Abomasal Dilatation and Emptying Defect / Abomasal Dysautonomia

3. What structures should be specifically targeted for histological evaluation?

Autonomic ganglia, celiac-mesenteric ganglion, submucosal and myenteric ganglia of GIT.



A necrotic neuron in the coeliacomesenteric ganglion has a pyknotic nucleus and eosinophilic soma with irregular cell border. Adjacent neurons appear normal.

Comment

This condition or syndrome is most often seen in Suffolk sheep and has been described in the UK and US. Although usually a sporadic condition, there are endemically affected flocks and rare reports of outbreaks. Affected sheep become emaciated, although the abdomen may be distended by the impacted abomasum. An apparent reduction in the number of neurons (presumably from atrophy), and the presence of scattered chromatolytic and/or necrotic neurons, have been observed in the celiac-mesenteric ganglia of affected sheep; in fact, these ganglia are reduced in size and therefore more difficult to find in affected sheep than in healthy control animals. Neuronal atrophy in submucosal and / or myenteric ganglia may also be observed, but this is an inconsistent finding. These histological changes are reminiscent of “grass sickness” of horses in the UK and other forms of dysautonomia affecting various segments of the gastrointestinal tract in other animals. I have seen a similar ganglionic lesion in a ewe with hydrometra, from a flock that had endemic Abomasal Emptying Defect. In any animal, autonomic ganglia should be sought and examined whenever visceral organs appear abnormally distended or impacted.

The autonomic changes are admittedly subtle, especially when only viewing a single photo. The ganglionic atrophy is more obvious in the gross specimen: the coeliacomesenteric ganglion of affected ewes was very difficult to find; in fact I had to trim-in tissue from the base of the coeliac and cranial mesenteric arteries and simply hope that the ganglion would be there (it always was). In contrast, healthy Suffolks at slaughter had relatively huge and easy-to-find ganglia. In blind fashion, I compared ganglion histology between affected and healthy sheep, but it was difficult not to be immediately biased, prior to even putting the slide on the stage, by the larger size and deeper basophilia of ganglia from the normal sheep. I did find a pinkish neuron in two of the normal sheep, so I classified them as exhibiting chromatolysis which kept the p value above 0.05; however the degree of difference was qualitatively very discernible between the two groups, and I didn't find even one apparently necrotic neuron in any of the healthy sheep. A reference to that study:

Abomasal Emptying Defect of Sheep may be an Acquired Form of Dysautonomia

S. J. PRUDEN, M. M. MCALLISTER, P. C. SCHULTHEISS, D. O'TOOLE, AND D. E. CHRISTENSEN
Vet Pathol **41**:164–169 (2004)

Since then, a couple of related observations have been published in goats (abomasal impaction) and alpacas (colonic impaction):

Edwards, G.T., Nevel, A., 2008, Abomasal emptying defect in two British Toggenburg goats. *Vet Rec* 162, 418-419. Lewis, C.A., Bozynski, C.C., Johnson, G.C., Harral, C.M., Williams, F., 3rd, Tyler, J.W., 2009, Colonic impaction due to dysautonomia in an alpaca. *J Vet Intern Med* 23, 1117-1122.



Causes of this syndrome are unknown. The condition is not heritable, although there must be genetic co-factors that make Suffolk sheep much more susceptible than other breeds. The occurrence of outbreaks and the usual lack of obvious inflammation have led to speculation about possible neurotoxins.

It appears to be increasingly common for pathologists to eschew the term “dilatation” as being synonymous with “dilation.” However, I make a distinction between dilatation, which indicates that an organ or orifice has become distended beyond physiologically normal limits, and dilation, which indicates normal events such as relaxation of a sphincter, opening of the iris, and diastolic filling of the cardiac ventricles. This distinction is supported by some but not all dictionaries. Zachary and McGavin’s textbook, *Pathologic Basis of Veterinary Disease*, uses the term “dilated cardiomyopathy” instead of “dilatative cardiomyopathy.”