Case #R14-31206

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Signalment and History

• 7-month-old, F, Pig
  – Clinical History:
    • Lethargic and not eating for 6 days
    • Found dead
  – From a group of 4 pigs on pasture
  – Pigs raised without vaccinations and dewormers
  – Fed a mixture of greens, spent grains from a brewery, fermented mix of barley, oats, and wheat
  – Mineral supplementation: kelp and diatomaceous earth
Gross Findings

Image Courtesy of Dr. Jennifer Haugland
Gross Findings

Images Courtesy of Dr. Jennifer Haugland
Gross Findings

Images Courtesy of Dr. Jennifer Haugland
Liver
Liver
Liver
Morphological Diagnosis

- Liver: centrilobular to submassive necrosis, multifocal to coalescing, moderate to marked with hemorrhage and mild lymphoplasmacytic and histiocytic portal hepatitis, fibrosis, and stromal collapse

- Heart, epicardium: cardiomyocyte degeneration, multifocal, minimal with multifocal, mild to moderate edema, hemorrhage and lymphohistiocytic epicarditis

- Skeletal muscle: myocyte degeneration, multifocal, minimal with multifocal, mild edema and hemorrhage
Toxicology

<table>
<thead>
<tr>
<th>Selenium (ICP/MS)</th>
<th>0.365 ppm</th>
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<tr>
<td>Vitamin E (HPLC)</td>
<td>6.4 ppm</td>
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**Interpretation**
Reported adequate liver mineral concentration ranges (ppm wet weight) for adult pigs are:

Selenium 0.40-1.20*
Vitamin E 4.5-12.0

*Porcine liver selenium levels between 0.12 and 0.25 ppm wet weight are considered marginally deficient
Hepatosis dietetica

– Occurs in young, fast growing, good conditioned pigs with insufficient dietary protein, vitamin E and/or selenium
– Vitamin E and Selenium act concurrently to preclude oxidative damage to cell membranes
– Current evidence suggest a need for concurrent deficiencies (sulfur-containing amino acids, tocopherols, selenium) for hepatic necrosis to occur
– Disease may be caused by stressful circumstances, if pigs are in a poor state of nutrition
Hepatosis dietetica

– Additional Gross Findings:
  • Carcass can appear pale or anemic
    – Ulceration of the squamous mucosa of the stomach
  • Adipose tissue may have yellow staining (yellow-fat disease)
  • Hemorrhagic diathesis
  • Pulmonary edema
  • Serous effusions
– Additional Histologic Findings:
  • Fibrinoid degeneration of small arteries-mesentery, gut, and heart
Questions?

• Thank you!
  – Dr. Jennifer Haugland
  – Mary Baker and the Rollins Histopathology Laboratory
References
