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Proliferative Enteropathy

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After a year of outbreaks of new bacterial organisms in Central Oregon, we are displeased to announce another newcomer to our area. *Lawsonia intracellularis* is a bacterial organism that affects the gastrointestinal tract of foals 4-7 months of age causing a disease called Proliferative Enteropathy. The bacteria typically causes disease in recently weaned foals, though adult horses can become infected as well. Infections usually occur during late summer, extending into the winter months.

Lawsonia is an intracellular pathogen (meaning it lives within the cells) of the small intestine. This organism is most frequently seen in pigs, causing a similar disease. In the recent years, there has been an increase in reports of affected horses, and we are now seeing cases here in Central Oregon. The disease is transmitted via a fecal-oral route, meaning the horse ingests the bacteria from consuming affected horses feces. Affected horses shed a large amount of bacteria in their manure and therefore are a source of infection for their herdmates. The organism can survive outside the host in the environment reasonably well, so it can remain on a farm for quite some time. Other species of animals may be a source of infection as well. Weanlings are the age-group commonly affected, most likely due to stress which weakens immunity. Researchers believe the incubation period (period of time between when a horse is infected and when he begins to show clinical signs) is about 2-3 weeks.

The bacterium causes severe inflammation in the small intestine, which in turn alters the intestines ability to absorb nutrients and causes inappropriate fluid secretion. This leads to profuse watery diarrhea and severe weight loss.

Signs of infection include fever, depression, weight loss (very rapid), edema (swelling in the subcutaneous tissue, usually in gravity-dependent areas), diarrhea, colic, rough hair coat, and a pot belly appearance. Secondary complications due to stress include gastric ulceration, pneumonia, and parasitism. Bloodwork typically shows anemia, increased white blood cell count, low protein, and increased muscle enzymes. Ultrasonographic examination can reveal thickening of the small intestinal wall.

With many diseases causing similar clinical signs, it is important to rule out causes such as GI ulceration, parasitism, neoplasia, and enteritis due to viruses or bacterial organisms such as *Salmonella*, *E. coli*, or *Clostridium*. The low protein is very characteristic of this disease, so it should always be included in a list of differential diagnoses for hypoproteinemia.

Diagnostic testing for disease includes fecal analysis (PCR) and/or blood (serologic) testing (to look for antibodies), though results are not always accurate. Definitive diagnosis is only determined post-mortem by examining affected tissue (small intestine) for bacterial organisms. At necropsy, we see profound thickening, swelling, hemorrhage, and sometimes ulceration of the small intestinal walls,

namely the distal jejunum and ileum. Researchers are currently searching for a more accurate test for antemortem use.

Recommended treatment is antibiotic therapy that will penetrate cell membranes to get to the organism, such as erythromycin +/- rifampin, for 2-4 weeks for mild cases. Severe cases require more intensive therapy, such as plasma transfusions, intravenous fluid therapy, and anti-ulcer medication. Typically, one sees rapid improvement in clinical signs within 24 hours after antibiotic therapy begins! This disease is potentially fatal without treatment, though there is a good survival rate when appropriate antibiotics are administered. There is no current vaccine available for horses.