Lawsonia intracellularis infections in foals on the rise

*Lawsonia intracellularis* is an obligate intracellular gram-negative bacterium causing equine proliferative enteropathy (EPE) in mostly young horses. It causes proliferation of the affected enterocytes, resulting in a thickening segments of small intestines (sometimes large intestines as well) (Lawson and Gebhart, 2000). *L. intracellularis* does not grow in routine aerobic/anaerobic culture and can only be grown in vitro in cell culture which is not practical. Therefore several quick and reliable PCR tests have been developed for direct detection of bacteria.

Besides horses, *L. intracellularis* infects pigs and many other domestic and wild animals, including hamsters, rabbits, foxes, deer, ferrets, ostriches, and non-human primates. Previous studies have shown that a variety of wild and domestic animals, including dogs, cats, rabbits, opossums, skunks, mice and coyote, can shed *L. intracellularis* on farms with diagnosed EPE cases. Feco-oral transmission of *L. intracellularis* has been documented in naive foals housed with clinically infected foals experimentally challenged with an equine isolate of *L. intracellularis* (Pusterla et al 2010).

Clinical signs include depression, anorexia, fever, peripheral edema, hypoproteinemia, hypoalbuminemia, weight loss, colic and diarrhea in affected foals. Early clinical signs are generally unspecific and include mild depression, partial anorexia and fever. Signs of EPE may resemble those of other gastrointestinal disorders such as parasitism, bacterial infections (*Clostridium* spp., *Salmonella* spp., *Neorickettsia risticii*), rotavirus, coronavirus, ulcerations, sand accumulation, intestinal obstruction and intoxication with plants, chemicals and pharmacologic agents such as nonsteroidal anti-inflammatory drugs or antimicrobials (Pusterla and Gebhart, 2013). Therefore other diseases should be ruled out with diagnostic tests.

A presumptive diagnosis of EPE could be challenging and generally made based on age of the affected animal, hypoproteinemia/hypoalbuminemia, fever and presence of thickened small intestinal loops on ultrasonographic evaluation. Laboratory diagnosis is generally confirmed with PCR detection of *L. intracellularis* in feces or rectal swab. As a general rule for diagnosis, samples should be obtained before the antimicrobial treatment. Please send serum for albumin ($5.00) and total protein ($5.00) evaluations (An Equine Chemistry Panel can also be requested ($17.00)). For PCR confirmation, fecal specimens, rectal swabs or mucosal scraping should be submitted in clean screw tubes (not in gloves!) (The in-state fee is $35.00).

EPE in horses are treated by macrolides (such as erythromycin) alone or in combination with rifampin, chloramphenicol, oxytetracycline, doxycycline or minocycline administered for 2–3 weeks. (Page et al, 2012; Pusterla and Gebhart, 2013).

As a general rule, separating horses showing clinical symptoms from the rest of the animals until full recovery or cessation of fecal shedding is a logical biosecurity measure to prevent spread and environmental contamination. The shedding can be monitored by PCR test. The monitoring of a herd with endemic EPE status includes the regular physical evaluation of foals and regular assessment of total protein concentrations. Suspected animals in high risk areas can be monitored with a PCR test as well.
Maintaining good pest control and preventing non-equine domestic and wild animals to gain access to feed and feeding areas may potentially minimize the risk of disease spread.

An attenuated *L. intracellularis* vaccine has been shown to be safe and the administration well tolerated by the foals (Nogradi et al., 2012). However, no vaccine is labeled for use in horses. The extra-label use of the *L. intracellularis* vaccine may be considered on naïve and endemic farms in an attempt to reduce or prevent EPE (Pusterla and Gebhart, 2013).

Below is a figure representing the total number of cases submitted to UKVDL between 2010 and 2013. The figure also shows positive cases (both ante-mortem and post-mortem) confirmed by PCR. We have more positive cases submitted this year compared to the previous years. Exact reason of this is not known; however, infected domestic and wild animals, including pigs, hamsters, rabbits, foxes, deer, ferrets, opossums, skunks, mice and coyote might be present in the environment in high numbers this year and played a role in transmitting the infectious agents to horses. In addition, it seems that practitioners maybe diagnose the infected animals earlier and treat better since ratio of ante-mortem positive cases (compare to total positive cases) decreased over the years (37.5% in 2010, 33.3% in 2011, 23.1% in 2012; 11.4% in 2013 even though total positive ante-mortem cases increased.

![Chart showing number of submitted cases and positive cases from 2010 to 2013]

More info can be found at Pusterla and Gebhart, (2013) and accessed at [http://ac.els-cdn.com/S0378113513003313/1-s2.0-S0378113513003313-main.pdf?_tid=42dea2c8-7c6c-11e3-af00-00000aab0f02&acdnat=1389629201_b5f98bd3b6d159f500c41a5c0d7e8560](http://ac.els-cdn.com/S0378113513003313/1-s2.0-S0378113513003313-main.pdf?_tid=42dea2c8-7c6c-11e3-af00-00000aab0f02&acdnat=1389629201_b5f98bd3b6d159f500c41a5c0d7e8560)

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