**Lawsonia intracellularis – an emerging disease in horses**

**Lawsonia intracellularis** is an intracellular bacteria that infects young horses, causing an intestinal disease known as equine proliferative enteropathy (EPE).

Lawsonia was historically considered a disease of pigs and has been associated with vast economic losses throughout the commercial pig industry. However, many species can be infected and its importance as an emerging disease in horses is now being recognised.

Over recent years, reports of sporadic cases and outbreaks have been increasing and the disease has reached almost worldwide occurrence. The disease typically occurs in young horses, with those between four and nine months of age particularly susceptible.

In piglets, multiple stress factors (such as weaning and mixing of groups) have been associated with clinical disease and it is possible that similar risk factors play a role in the development of disease in young horses. EPE has seasonal occurrence and in the UK and Ireland is most frequently reported between August and late February. However, recent reports have shown that this time frame varies by year and geographic region.

Transmission of disease is thought to occur through the ingestion of infected faecal material from wild or domestic animals. Exposure to pigs is not commonly reported in equine infections and studies have demonstrated that the bacterial strains that infect foals vary from those that cause disease in pigs.

However, the bacterial strain found in foals has been detected in numerous other species. In fact, Lawsonia appears to be widespread among rodents, wildlife and birds and it is likely that they play an important role in the spread of disease, although the exact source of infection in horses remains to be determined.

Following ingestion, the bacteria enter the cells of the intestinal tract and cause them to proliferate (“intestinal hyperplasia”). This results in abnormal thickening of the intestinal wall.

Although the small intestine is primarily affected, the disease can occasionally cause thickening of the large intestine too. As a result of these changes, the foal’s ability to absorb nutrients is reduced and loss of proteins occurs through the damaged and leaky intestinal wall.

**Tip of the iceberg**

Within a group it is the weaker foals that typically develop the most obvious signs of disease. However, these foals tend to be the tip of the iceberg and many others within the group are likely to be infected without developing overt clinical disease.

The presence of characteristic clinical signs in a young horse, combined with the detection of low albumin and protein on blood evaluation, and thickening of the small intestine detected on ultrasound examination are highly suggestive of Lawsonia infection.

However, these signs alone are not always conclusive and diagnostic testing is used to confirm the diagnosis. There are two main laboratory tests used for the investigation of Lawsonia. Faeces can be tested for the presence of bacterial genetic material or DNA (PCR testing).

This is helpful in confirming the infection in sick foals. However, the foal may have stopped shedding the bacteria by the time the illness is obvious and as a result many infected foals have a negative test result.

The second test is a blood test based on the identification of antibodies. A positive result simply tells you that the foal has been exposed to the bacteria, but cannot differentiate this from active disease. Furthermore, it takes time for the foal’s immune system to produce these antibodies and as a result it is possible for an infected foal to have a negative test result in the early stages of infection. It is, though, useful as a screening tool in a herd situation.

Although both tests have their limitations, they each play an important role in the diagnosis of Lawsonia infection.

In most cases, foals with EPE can be successfully treated with antibiotics and supportive care. Because the bacteria invade the cells of the intestine, antibiotic selection is important. The drug selected must be able to achieve therapeutic concentrations within the intestinal cells.

The more severely affected foals will require intensive care and in particular, intravenous fluid therapy designed to manage the low protein concentrations. Supportive care is provided to help prevent or decrease secondary complications.

**Good prognosis**

Overall prognosis for foals affected by *Lawsonia intracellularis* is good, with one study reporting a survival rate of 93%. However, a worse outcome is predicted in those with complications or the more severe form of disease.

Also important is the longer-term outlook. Research performed in Kentucky showed that although clinically affected horses sold for 68% less at auction as yearlings, there was no negative effect on race earnings later in life.

Current control strategies are aimed at the prevention of disease. Although we still do not fully understand the role of wildlife and birds in the spread of infection, it would seem sensible to reduce exposure through the use of good pest control and biosecurity. Similarly, isolation of clinically affected foals is likely to help reduce environmental contamination.

Vaccination is a commonly used strategy in the control of the pig form of the disease. The same vaccine has been tested in foals and has been used within the UK and Ireland for several years with encouraging results.

Additional strategies such as minimising stress and controlling heavy worm burdens may also help by reducing susceptibility to disease.

There remain a large number of questions regarding *Lawsonia intracellularis* and EPE. In particular, a better understanding of how the bacteria are transmitted to and among horses and the specific role of wildlife in the spread of disease could improve strategies to prevent or lessen the effect of this emerging disease in horses.

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**Articles of Interest**

- *Equine* SEPTEMBER 2017
- *in association with BEVA*

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**CATRIONA MACKENZIE**

of Rossdales Equine Hospital looks at the nature of the infection and subsequent disease – EPE – as well as treatment protocols

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**Catriona Mackenzie, BVMS, MSc, CertAVP(EM), MRCVS, graduated from Glasgow in 2006. Following a short spell in mixed practice, she moved to Kentucky where she undertook an Internal Medicine Fellowship at Hagyard Equine Medical Institute. On returning to the UK, Catriona joined Rossdales Equine Hospital in 2009 to undertake a two-year internship. She subsequently joined the stud team in Newmarket, where she worked for three years. Following this, she went to the University of Liverpool to complete a three-year residency in Equine Internal Medicine and rejoined Rossdales Equine Hospital as a member of the medicine team in March 2017. Her particular interests include foals, gastroenterology and intensive care patients.**

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**A yearling with Lawsonia showing general ill thrift.**

**Ultrasound showing thickening of the small intestine.**