

Ileitis Prevalence

Roberto M. C. Guedes / Veterinary School, Universidade Federal de Minas Gerais
Belo Horizonte, MG – Brazil

Ileitis is widespread in swine herds of different production systems worldwide. This disease is present in every single country that has a significant commercial swine production industry. It was the most frequent cause of disease in grower/finisher pigs reported in the 2000 National Animal Monitoring System survey, occurring on more than one-third of all sites and reported on 75% of large sites (10,000 or more total inventory) (Highlights, 2002).

Studies have shown that the prevalence of PE positive herds ranges from 15 to 100% in different countries, depending on the diagnostic test used.

Prevalence studies based on PCR tests using fecal samples usually demonstrate lower results, ranging from 15 to 68% (Moreno et al, 2002; Thompson et al, 2001; Merialdi et al, 2003; Wendt et al, 2004; Suh & Song, 2005; Cizek et al, 2006; Viott et al, 2013; Dors et al, 2015). The lower sensitivity of PCR in fecal samples, due to the presence of PCR reaction inhibitors in the clinical material, as well as the intermittent fecal shedding of the bacteria, makes the serological tests more sensitive to diagnosis ileitis. Serologic prevalence studies are much more numerous in the international literature, and demonstrate much higher prevalence results, ranging from 70 to 100% (Dunser et al, 2000; Hurtado et al; 2000; Ohlinger et al, 2000; Chouet et al, 2003; McOrist et al, 2003; McOrist, 2005; Henke & Blaha, 2006; Keller et al, 2006; Lapuente et al, 2006; Hardge et al, 2006; Armbruster et al, 2007; Biksi et al, 2007; Kukushkin & Okovytaya, 2012; Wu et al, 2014; Rezende et al, 2015).

Most of the serologic prevalence studies conducted until 2005 used the indirect fluorescent test (IFAT). Since then, an immunoperoxidase monolayer assay (IPMA; Guedes et al, 2002ab) and a commercial monoclonal antibody-based blocking ELISA (BioScreen Ileitis Antibody ELISA, Synbiotics Corporation, Lyon, France) became available (Keller et al, 2006). Based on a publication by Magtoto et al. (2014), both IPMA and the blocking ELISA were highly correlated with 100% specificity and 91% sensitivity.

As a result, considering the sensitivity of the most frequently used serological tests (IPMA and blocking ELISA), we have to assume that virtually all swine herds are positive for *Lawsonia intracellularis* infection.

Not all herds have the disease from one reason or another; however, all veterinarians and producers have to be aware about the potential damage it might cause. For instance, they might have to deal with acute problems when facing outbreaks of the hemorrhagic clinical form of the disease or they might have more chronic problems, when dealing with the subclinical presentation.

The economic impact of ileitis to the swine industry is estimated to be very high.

It was estimated to cost the Australian pork industry AUS \$25 per sow per year (Cutler & Gardner, 1988), GBP2 to GBP4 million per year in the United Kingdom (McOrist et al, 1997), and \$20 million annually in the United States (Winkelman, 1996). Simulations of the economic impact of ileitis on pig production in Australia, using the AUSPIG decision support system, have estimated the costs associated with chronic and acute (hemorrhagic) cases to range from AUS \$15 to \$141 per sow per year, respectively, depending on the clinical severity of the disease, incidence of infection and the type of medication strategy used to treat and control the disease (Holyoke et al, 1996).

There have been some ileitis eradication programs attempts, mainly in European countries (Johansen et al, 2001; Nielsen et al, 2006). They were based on medication, movement to new facilities, followed by another round of medication. These attempts had good results regarding improvement in growth performance and reduction of antimicrobial usage. However, in every single eradication attempt, the herd was reinfected up to 24 months later. There have been several advances in the understanding about the epidemiology of the disease, such as the role of rodents as biological vectors of the bacterium (Gabardo et al, 2017). Nevertheless, considering the unknown aspects about the epidemiology of the disease, the chances of reinfection are very high, mainly considering the possibility of outbreaks, as we know so little about the course of reinfections in herds free of *Lawsonia intracellularis*.

Taking in consideration factors such as:

The high bacteria load in feces of clinically and subclinically affected pigs

The low infective dose of *L. intracellularis* in pigs (10^4 microorganisms)

The role of rodents in maintaining the infection and transmission to pigs

That excretion in feces may last for up to 14 weeks

The survival time of at least two weeks in the environment

it is not a surprise such a high prevalence of the disease in swine herds.

As a result, prevention is the key element to minimize losses.