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Mycoplasma Arthrititis

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Introduction

Lameness as a clinical entity presents a common problem to the pig both in terms of production/economics and its welfare.

Lameness can result from physical injury or abnormalities, or as the result of infection.

'Joint Ill' is commonly seen in the young pig resulting from opportunist bacterial infection of a wide range of agents (Streptococci, Staphylococci, Arcanobacter etc.). However, a polyarthritis – infection and inflammation of more than one joint – can occur in the older pig, in isolation or in combination with other lesions as a result of infection with *Mycoplasma hyosynoviae*.

Causative Agent

Mycoplasma hyosynoviae (M hyos) is a small bacteria-like organism that is widespread within pig populations and is spread easily in infected pigs and by transfer of faeces. It is possible that it can spread on the wind.

Two other Mycoplasmas are commonly seen in the pig – *Mycoplasma hyopneumoniae* – the cause of Enzootic Pneumonia (SEP) in pigs - and the less frequently diagnosed *Mycoplasma hyorhinis*, which can cause respiratory disease and occasional lameness.

It should be noted that these 3 agents are distinct with no known cross-immunity. This, therefore, means that the widespread use of *M. hyopneumoniae* vaccines to control Enzootic pneumonia will have no protective effect against M. hyos infection and subsequent arthritis. No vaccines are available for the other two Mycoplasmas.

M. hyos lives on the tonsils of many pigs and can get into the body and circulate in the bloodstream before settling into joints. It is also believed to be excreted in breath, saliva and faeces. It will spread rapidly between pigs.

Clinical Presentation

The clinical presentation of Mycoplasma arthritis tends to vary with age and severity of infection.

In younger growing pigs – typically 10 weeks old and above – lameness will be of sudden onset and within a group can range from partial lameness on a single

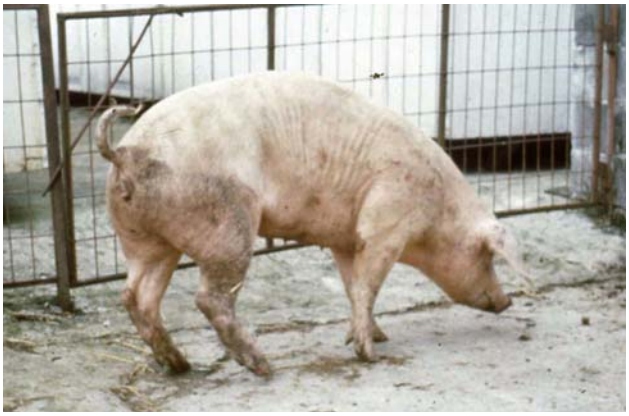

Fig 1: Clinical M hyos infection in a gilt can be clinically indistinguishable from osteochondrosis

Fig 2: The joint open to reveal synovitis typical of M hyos infection

Fig 3: Growing pig 'off back legs' may be a sign of M hyos infection but must be differentiated from other conditions

limb, through posterior recumbency ("off back legs") to extreme cases of complete recumbency and inability to stand due to pain in swollen joints.

The other group of pigs particularly vulnerable to M. hyos arthritis is young adult breeding stock, and in particular replacement gilts recently arrived on the farm.

(Except in the case of a totally naïve population that breaks down with infection, which is extremely rare, disease is not seen in mature animals.)

In young adults the disease will present more likely as a partial lameness with limping or shifting gait. However, severely affected animals may 'dog sit' and only rise with assistance.

Lameness tends to be more obvious in hind limbs but infection can occur in any joints in any limbs.

If lower leg joints are affected, particularly the hock, then a visible soft fluid swelling may be felt. Swollen superficial bursae may also be infected although this is likely to be of little clinical significance

Fig 4: Adventitious bursae seen below and behind the hock of a store pig can be infected with M hyos.

Typically the affected pig will not have a raised temperature, although in severely affected cases a small rise in temperature may be recorded (up to 40°C), probably the result of pain.

Development of Disease

In growing pigs, the disease is seen in solid floor yarded systems and scrape through dung systems. It is extremely rare in slatted accommodation.

In continually occupied scrape through buildings the disease will develop and spread to younger pigs, creating a continual cycle of disease. The survival of the organism is remarkably good, living up to 4 weeks when dry and longer in wet conditions.

Blood tests taken from young pigs prior to development of disease in a high risk situation often show positive results, suggesting that a serologically positive animal is not necessarily protected.

Clinical disease is seen more commonly in gilts than boars, particularly above 75-80kg. It can only be speculated that the hormonal changes that are occurring in the post-pubertal gilt precipitate disease. It is often more common in winter or following a sudden temperature drop.

Some clinical cases can resolve spontaneously within a few days, but in most cases a failure to treat will lead to chronic lameness that ultimately requires euthanasia, or if appropriate, humane slaughter. (An affected carcase is not totally unsuitable for human consumption.)

Complications

Animals that fail to respond to treatment – particularly replacement gilts – can often be found, on post mortem examination, to be suffering from osteochondrosis in addition to Mycoplasma infection. (This is a degenerative joint disease of complex aetiology and if significant requires a 'lifetime' approach to management, housing and nutrition.)

Diagnosis

The disease can be suspected on the grounds of sudden onset lameness in many animals, particularly if they have recently been moved, either within the farm or as recently delivered animals.

With difficulty, the organism can be grown from affected joints of untreated pigs but diagnosis would usually be achieved by demonstrating a rising titre of antibodies in blood samples over a 2-3 week period following onset of disease. A mild synovitis may be seen in affected joints post mortem.

The disease needs to be differentiated from uncomplicated osteochondrosis, Erysipelas arthritis and a wide range of nutritional and toxic conditions that occur occasionally, if rarely, in growing pigs. In particular, pantothenic acid deficiency and ionophore toxicity can both produce recumbency and dog sitting without significantly raised temperatures in groups of pigs.

Treatment

A number of antimycoplasma therapies are available and the acutely affected individual requires treatment for 3-5 days.

Tiamulin, lincomycin and tylosin all appear to achieve sufficient penetration of the joints to give a satisfactory response. Perhaps the greatest failing of treatment is that an animal is treated for 1 or 2

days with spectacular results only to relapse a week or so later. This is the result of inadequate clearance of the organism or reinfection from a heavily infected environment.

Where large numbers of animals are affected, mass medication via water – or less appropriately feed – is indicated, but always remember that severely affected pigs may have difficulty either reaching or competing for feed or water. In such cases, the pig should be isolated in hospital accommodation and individually treated.

Prevention

The disease results from a combination of excessive challenge with infection, and stress that results from moving/mixing.

To reduce the incidence of disease in growing pigs in known 'at risk' environments, efforts must be made to improve hygiene by emptying buildings, washing, disinfecting and if possible lime washing of floors. Earth floors in barns are particularly difficult and should be avoided.

Where the disease is predictable i.e. soon after a move of building or following delivery of replacement gilts, strategic medication can be applied to prevent development of the condition. Any of the previously listed antibiotics can be used, as can tetracyclines, but it must be noted that the poor penetration of this class of antibiotics to joints makes them ineffective for treatment of affected cases.

Costs

There is little published data on the cost of M. hyos to pigs. Probably the most significant costs are;

1. Treatment costs of affected animals
2. Slowed growth and increased wastage of growing pigs prior to slaughter
3. Loss of breeding gilts either as growing pigs or as delivered replacements requiring slaughter rather than retention. In a severely and continually affected barn holding future breeding gilts between 30 and 100 kg up to 20% of animals have been rejected at selection due to lameness/leg weakness or poor conformation associated with previous M. hyos infection.

Conclusion

M. hyos arthritis is a sporadic disease that can become ingrained within a pig keeping system and cause welfare and production problems.

Where appropriate strategic prophylactic medication can be applied and attention to hygiene will reduce the prevalence of the disease.

Vaccination is not available.

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