

Streptococcal Meningitis

Of the many different causes of meningitis, one of the most common is due to an infection with a bacterium called *Streptococcus suis*. Streptococcal meningitis mainly affects pigs that are 4-8 weeks of age, but can be seen earlier, and usually affects good sized pigs.

There are at least 35 different serotypes of the bacterium, with many different strains within each serotype – some strains are more pathogenic (likely to cause disease) than others. The bacterium is found in the sow's vagina so is usually transmitted to the piglets at birth – the bacterium can be isolated from the pig's tonsils or upper respiratory tract from around 5 days of age. As the bacteria can be found in the pig without causing clinical issues, isolation of the bacterium needs to be correlated to clinical disease.

The organism is transmitted pig to pig by direct contact and can travel short distances by aerosol. The bacteria can also be transmitted by mice and flies, flies carry the bacterium internally and can contaminate materials for at least 4 days. It can survive in water at 4°C for up to 2 weeks but only for 10 minutes at 60°C. Whilst in faeces it lives for 3 months at 0°C but at 22-25°C for 8 days. It can also survive in dust for 1 month at 0°C or 24 hours at 25°C.

Most commonly available disinfectants will kill the bacterium, as long as faeces and dirt have been removed from the surface prior to application of the disinfectant.

Clinical Signs

The bacterium invades the pig and enters the bloodstream travelling to the brain. The brain is supported and protected by 3 layers of tissues, collectively known as the meninges. The bacterium causes an inflammation of the meninges, resulting in a meningitis (the medical term for inflammation is '-itis', hence it is called 'mening-itis').

The earliest sign of infection is an increase in body temperature resulting in a decrease in feed intake, the pig becomes dull and sometimes has a shifting lameness. Clinical signs then progress to include nervous signs such as poor coordination and an unusual stance, developing to the pig recumbent lying on its side, usually with the forelegs extended and hindlegs retracted. Whilst on its side the pig often 'paddles' its legs in the air. The clinical signs can be severe, so without rapid, effective treatment the pig can die or will require euthanasia.

Clinical signs can progress very quickly and in peracute, sudden, cases of the disease, the pigs can be found dead with no previous clinical signs observed.



Picture showing the typical body position of a pig affected with meningitis, in recumbency

Picture courtesy of www.nadis.org.uk

The bacterium can also cause visibly swollen joints, resulting in a lameness, and can cause inflammation of the valves in the heart (endocarditis) that disrupts blood flow through the heart making it less efficient. Inflammation of the heart valves changes the thin valve tissue to a much more thickened cauliflower lesion. When this is extreme, sudden death can result as the pig goes into congestive heart failure. Prior to death, the pig can appear to have pneumonia due to the fluid build up on the lungs as the heart malfunctions, which can be seen as difficulty in normal breathing.

Diagnosis

Where Streptococcal meningitis is suspected, based on clinical history, a diagnosis is made through post mortem of a freshly died or euthanased pig and samples from suspect lesions are taken. The bacteria is then cultured and isolated, and if possible further serotyped.

As the bacterium can usually be found in a healthy pig, sample results are correlated to the clinical history.

Antibiotic sensitivity testing is also carried out on the isolate to aid selection of treatments.

Treatment, Control & Prevention

As clinical signs progress quickly, rapid treatment is required once signs are identified in order for the treatment to be effective. Treatment with penicillin, ampicillin or trimethoprim sulphamide for 3-5 days is usually effective. Individual treatment should be administered, but group water or feed medication may also be required depending on the clinical situation on farm.

As the pigs become recumbent, they no longer drink. Most clinical cases of Streptococcal meningitis die from dehydration so it is advised to administer water little and many times throughout the day, remembering that pigs do normally drink a lot of water (1 litre of water per 10kg of body weight). In addition to administering water and antibiotics, treatment with an anti-inflammatory is advised to help decrease the inflammation and give pain relief.

A vaccine is available but as there are many different serotypes and strains of the bacterium, isolation of the strain on farm that is responsible for clinical disease is needed to ensure the vaccine would be effective.

Management of stressors to the pig, such as incorrect ventilation and other diseases on farm, are important to prevent clinical disease. Clinical disease can be a result of a secondary infection particularly to viruses such as PRRS (Porcine Reproductive and Respiratory Syndrome also known as 'Blue Ear Pig Disease') and Influenza – both these viruses lower the effectiveness of the immune system. Practices such as all-in all-out should be implemented, along with a thorough clean and disinfection programme and an effective rodent control programme to decrease transmission.

The bacterium is zoonotic, meaning it can be transmitted between animals and humans. Immunocompromised people, such as those that do not have a spleen, are at risk of infection, which can result in clinical meningitis. This should be taken seriously and staff should be questioned to ensure they are not at risk of contracting meningitis and that precautions have been taken.

Please speak to your Vet to discuss any questions you may have
