

Parvovirus

Clinical disease caused by porcine parvovirus results in clinical signs more commonly known as SMEDI (stillbirths, mummified piglets, embryonic death and infertility). Infertility refers to a decrease in the total number of piglets born per sow. The virus is present in stock on most farms, but clinical disease is seen less frequently now due to effective vaccination protocols.

The virus is usually brought into a naïve herd through infected incoming stock. The virus can then infect a naïve pig through saliva, nasal discharges, urine, faeces, and contact with infected foetuses and foetal membranes. It can also be transmitted in semen – infected semen remains infectious for 2 weeks.

The virus can persist in the environment for up to 4 months – higher temperatures do not immediately destroy the virus and it can survive for 2 days at 56°C (133°F). The virus is killed by some disinfectants, but required contact time can vary greatly between products.

Clinical Signs

When a naïve sow becomes infected, the immune system will be stimulated and antibodies produced. In order for clinical signs that are associated with parvovirus to be shown however, the naïve sow would need to be infected at the point of service, directly through the cervix into the uterus.

The virus infects and replicates in cells that are about to divide and multiply themselves, such as in the cells of a developing foetus, resulting in death of that foetus. Infection with the virus does not result in a viraemia (a viral infection of the blood), instead being transmitted from one foetus to the next within the uterus. Because of this, foetal death within an individual sow is seen at different ages.

If an embryo dies before the skin and bones have been formed, at around 30-35 days of pregnancy, it will be completely reabsorbed resulting in a decreased number of pigs born. Foetal death after this development stage will result in a complete absorption of all the foetal fluids, but not of the skin and bones, resulting in a mummified piglet. Infection later on in pregnancy will result in stillborn piglets.

Piglets that are infected late on in pregnancy, but which do not die, will become persistently infected for a period of around 8 months, since their immune system does not recognise the virus as foreign and does not produce an immune response towards it.



Picture demonstrating different stages of foetal death seen with porcine parvovirus

Courtesy of ocv.tufts.edu

Maternal antibodies are passed to piglets through colostrum and can be detected 4-6 months after birth.

Once a sow has shown clinical signs and recovered, she has solid immunity to the virus so culling is not required.

Diagnosis

The clinical picture of foetal death at different stages of pregnancy, with an increase in mummified and stillborn piglets, along with smaller litters, usually gives a good clinical indication of parvovirus.

To diagnose parvovirus, fresh mummified fetuses of under 70 days of pregnancy are needed – the lung and liver are tested for the presence of the virus.

Blood samples can be taken from sows, but the results need to be interpreted with caution. A single blood sample can demonstrate a high level of antibody, but this only indicates that the sow has been previously exposed to the virus and not necessarily that it is the cause of the clinical signs seen. Usually two blood samples are taken to see if there is a rising level of antibody and, if so, indicates that the sow has been infected recently.

If a boar is suspected to be infective, semen can be tested using a PCR test for the virus.

Treatment, Control & Prevention

As the disease is caused by a virus, antibiotics are not effective.

The wild virus produces a good immune response and, in combination with vaccination, a strong immune response against the virus can be produced. In an outbreak of porcine parvovirus, it is not possible to halt the disease process as foetal death will have already occurred in adults due to farrow. To decrease clinical signs seen in the future, sows can be vaccinated in order to increase their immunity. In sows that are closer to farrowing, vaccination can help to decrease the number of stillborn piglets seen, whereas in sows that are in an earlier stage of pregnancy, it can help to decrease the number of mummified and stillborn piglets.

The key to control of porcine parvovirus is the presence of active immunity within the sow, particularly prior to service and during pregnancy. This can be done through the use of commercial vaccines. The use of 'controlled exposure' (previously known as feedback) of foetal material and infected fetuses is illegal in the UK.

Boars do not show clinical signs and their semen is not damaged by infection, although once infected, the virus is shed in semen for up to 2 weeks. Although commercial vaccines are not licensed for use in boars, they are usually vaccinated at 6 monthly intervals with Veterinary instruction to reduce this risk.

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