

Porcine parvovirus

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Nature of the disease

Porcine parvovirus (PPV) is a virus disease of pigs caused by a Parvovirus from the Parvoviridae family. It is associated with reproductive problems, including abortion, small litters, still births, neonatal deaths and weak piglets. There is no clinically apparent disease in non-pregnant pigs. Disease occurs when sero-negative dams are infected in the first half of gestation and the virus crosses the placenta.

Classification

SPC List D disease

Susceptible species

Pigs

Distribution

PPV is endemic in most countries with large pig populations throughout the world.

Clinical signs

Infection of post-natal pigs occurs without detectable clinical signs. In pigs the clinical picture is variable depending on the stage of when infection occurs. There may be:

In boars, PPV can temporarily disturb spermatogenesis.

Post-mortem findings

The findings are non-specific

Differential diagnosis

Other causes of reproductive failure in pigs include:

Specimens required for diagnosis

PPV can be suspected on clinical grounds a history of small litters (less than five piglets), returns to service (particularly at irregular intervals), mummifications (>1% of births) and stillbirths, particularly affecting young sows and with no maternal illness. Definitive diagnosis requires laboratory support.

Identification of the agent is the recommended procedure. Specimen of mummified foetuses, preferentially less than 16 cm in length, can be submitted for direct immunofluorescent test and viral hemagglutination test. Stillborn pigs and neonatal pigs are not recommended.

Serology is practiced when mummified foetuses are not available. Techniques include Serum neutralisation test, hemagglutination inhibition test, ELISA and immunodiffusion. Blood samples should be collected from sows with unsuccessful reproduction and from neonatal pigs. Detection of antibodies in piglets means in utero infection as antibodies do not cross the maternal-fetal junction. Antibodies in sows must be interpreted carefully as the disease is ubiquitous. Titres of >1:256 indicate that there has been active infection, but because antibody levels are persistent only rising titres can incriminate PPV in a current problem.

If serum is not available, it is possible to detect antibodies in body fluids from fetuses or their viscera, kept in a plastic bag overnight at 4°C.

Transmission

The virus is infective via the oronasal, transplacental and venereal routes.

The oronasal route is believed to be the most important. Virus is shed for only about two weeks after infection, in faeces, urine, semen and nasal secretions. The greatest source of infection is the fluids and foetal membranes of parturient sows. The virus can persist for four months or more in the environment.

Risk of introduction

PPV can be introduced to previously free herds via infected animals, semen, embryos or fomites.

Control / vaccines

PPV-free herds must take precautions about the sources of introduced stock, or embryos. Bought in animals should be isolated for at least three weeks in case their source herd has recently become infected. Purchase of pregnant pigs should be avoided because of the risk of infection by endemic virus. Farm perimeter security and control of possible fomites is also important.

A number of inactivated and live vaccines are available to prevent PPV infection. One of the latest killed vaccines can be used from five months of age and two initial doses (3?4 weeks apart) gives protection for two years. It is important to vaccinate boars as well as sows if control is to be effective. The vaccination of seronegative sows and boars is also recommended when the virus is very present in an area as it is very difficult to prevent its introduction.

References

1. Abortion in pigs, In Merck Veterinary Manual, National Publishing Inc. Eight ed, 1998, Philadelphia, p 995
2. MENGELING WL. (1999), Porcine Reproductive and Respiratory Syndrome, In Diseases of Swine, Iowa state University Press, Ames, Iowa, USA, p. 187-200

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