Brucellosis (Porcine)

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Nature of the disease

Brucellosis in pigs (contagious abortion of swine) is an infectious and contagious disease caused by the bacteria Brucella suis. It is mainly a disease of pigs but it can also affects other domestic species and humans.

It is primarily a genital disease, causing abortions in sows but it also affects other organs, especially bones and joints.

Classification

OIE List B disease

Susceptible species

Br. suis primarily affects domestic and wild pigs (Sus scrofa domesticus and Sus scrofa scrofa).

It can transiently affect other species such as cattle, horses, rabbits, dogs and humans.

In humans, infection with Br. suis can produce a similar condition to undulant fever (caused by Br. abortus).

Distribution

Br. suis occurs in the South and Central America, parts of the USA, Europe and Central and Southern Asia.

In the region it has been reported from Australia, Fiji, French Polynesia, Tonga, and Wallis and Futuna.

Clinical signs

Porcine brucellosis is a herd rather than an individual pig problem. Brucellosis in pigs does not

always cause symptoms and therefore clinical diagnosis is very difficult. The disease primarily occurs in adults. When it is endemic the common signs are:

When recently introduced to a herd, more dramatic signs are likely:

Although porcine brucellosis is usually recognised through reproductive failure in sows, boars may show significant clinical signs:

Post-mortem findings

Purulent necrotic lesions are seen, mainly in the genitalia, bones, joints, mammary glands, lymph nodes, spleen, liver, kidneys, bladder and occasionally the brain.

Nodular splenitis is suggestive of the disease. Nodules and abscesses may be seen in both the gravid and non-gravid uterus. The placenta may be oedematous and hyperaemic. Foetuses have haemorrhagic sub-cutaneous and peritoneal fluid.

Necrotic, purulent and sometimes calcified foci occur in the testes and male accessory sex organs (especially the epididymis and seminal vesicles).

Differential diagnosis

While there are a range of causes of reproductive failure in pigs, brucellosis is the only disease in which reproductive failure in sows is accompanied by orchitis in boars and locomotor disorders.

Some other common diseases causing abortion in sows are:

Specimens required for diagnosis

As clinical signs can be very few and that a number of other conditions can cause abortions, diagnosis must be confirmed by laboratory testing.

Isolation of the agent can be done from dead animals with lymph nodes, organs such as liver, spleen or genital organ or, preferentially, abortion material. From live animals, vaginal swabs, semen, castrated testicules, or blood samples can be submitted. Culture and identification of Brucella are often fruitful but requires skilled personnel and equipped laboratory. Antigen fixation and PCR technology are becoming a more important mean of identification.

Serological tests, processed from serum samples, include indirect ELISA, competitive ELISA and buffered Brucella antigen tests (prescribed by OIE for international trade) which include the rose bengal agglutination test and the buffered plate agglutination test. Serological tests are used for screening purposes and herd testing more than individual diagnostic due to lack of sensitivity and specificity of the tests (cross reactions with Yersinia enterocolitica). These tests do not differentiate with Brucella abortus.

Hypersensibilisation cutunaeous tests have developed but are not regarded as interesting in most countries.

Transmission

Porcine brucellosis is transmitted venereally and by ingestion.

Bacteria are excreted in large numbers, for long periods in semen and boars? urine and in uterine discharges and milk. The bacteria can survive in urine, faeces and water for up to 6 weeks. The ingestion way is thought to be the most important.

Sometimes uninfected herds get contaminated by wild or feral pigs mating with domestic sows.

Infection can also occur via inhalation, the conjunctiva, or cutaneously but without epidemiological significance.

Risk of introduction

The disease is most likely to be introduced through the introduction of infected, purchased pigs. Testing, and purchase from accredited-free herds should reduce this risk.

Semen for artificial insemination should also be considered at risk.

Control / vaccines

No drugs have been consistently effective in curing the disease. There is no effective vaccines.

To control the disease, basic hygiene, measures are important:

To eradicate the disease from herds, three methods are usually ditinguished:
1.   Destocking of the all herd followed by restocking after 6 months is the most effective and economical in the long run,
2.   Progressive destocking by marketing adult pigs for slaughter and retaining weanling pigs for breeding stock, preferentially in a different premises (two-herd segregation program). It is useful to save genetic material but is not always successful and requires a lot of testing.
3.   Removal of serologic reactors and retesting until the herd is free. This option is interesting if a sporadic case occurred but fails often because it lets the disease opportunity to spread, particularly among young animals.

In every circumstances movement control of pigs between herds is essential.

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