

FOOD ANIMAL MEDICINE (VCM 501) LECTURE NOTES ON:

ATROPHIC RHINITIS

Rhinitis is an inflammation of the upper respiratory tract and is present to some degree in almost every commercial swine herd. This kind of inflammation can be caused by bacteria, viruses, chemicals (manure gas), dust, pollen, temperature fluctuations, and other irritants in the environment, and can have a negative impact on the affected pig's feed-conversion efficiency and rate of gain.

Atrophic rhinitis (AR) is the term commonly used to refer to the condition of a sneezing pig with a crooked, bleeding snout and tear-stained face. The term atrophy indicates that the turbinate bones inside the snout are shrunken and distorted (as a result the tissues inside the nose become infected or damaged). These bones are lined with mucous membranes and filter the air the pig inhales, and so they are vulnerable to irritation and infection by changes and contaminants in the environment. Atrophy of the turbinate bones without external signs, like a crooked nose, is called "turbinate atrophy".

Aetiology

Toxigenic strain of *Bordetella bronchioseptica* and *Pasteurella multocida* type D and type A.

Epidemiology

AR occurs worldwide where pigs are reared under intensive conditions. It has, however, become much less important with the onset of vaccination and hygienic farrowing house. Disease is more common in young herds particularly those containing large numbers of gilts.

Transmission

Direct contact (carrier sow to piglets) and droplet infection are the routes of transmission.

Forms of AR

There are two forms of the disease:

a) **Mild and non-progressive** where the infection or irritation occurs over a period of 2 to 3 weeks. The inflammation does not progress and structures in the nose called turbinate bones repair and return to normality. The term non-progressive atrophic rhinitis is used for the slight to severe rhinitis and usually transient turbinate atrophy in which no toxigenic *P. multocida* are found, where there are no clinical signs and no obvious growth retardation. Organisms such as *Bordetella bronchioseptica*, non toxigenic *Pasteurella multocida*, other environmental organisms and dust or gases can produce this type of rhinitis in the nose. The mild form is very common.

b) **Progressive atrophic rhinitis (PAR)** where toxin producing strains of the bacterium *Pasteurella multocida*, cause a continual and progressive inflammation and atrophy of the tissues and nose distortion. For a herd however, to have PAR toxigenic pasteurella must be present.

They are carried in the nose and tonsils of the adult pig and there is always the risk therefore of buying them into the herd. This is the most common method of entry. Progressive atrophic rhinitis (PAR) is a serious condition both in sucking and growing pigs.

Economic Importance

The economic effects of PAR may be reduced growth rate and worsened feed-conversion efficiency.

Clinical signs

They include sneezing, runny eyes, discharges from the nose sometimes containing blood and early signs of distortion of the face, with shortening or twisting of the upper jaw becoming evident at weaning time. There may be dyspnea in severe cases. It is important also to appreciate that sneezing is a common occurrence in the sucking pig and need not necessarily be associated with PAR. PAR affects most of the piglets present. However, individual piglets may also develop distortion of the nose from trauma or some other cause but this is not PAR.

Diagnosis

This is carried out by:

- The clinical signs in the sucking piglets and nasal distortion in growing pigs.
- Sectioning the snout of pigs at slaughter and examining the degree of turbinate damage in the nose.
- Isolating the organism from sucking or rhinitic pigs by swabbing the nostrils and submitting for bacteria culture.

Differential Diagnoses

The most common would be non progressive rhinitis and sneezing caused by cytomegalo virus, bordetella and haemophilus organisms or environmental irritants. A significant differentiating feature here is that if these organisms are causing sneezing in the sucking pigs then by 4 weeks after weaning sneezing will have disappeared with no facial distortions.

Treatment

- Once toxigenic pasteurella have been identified the complete breeding herd should be immediately vaccinated six weeks apart using a vaccine made from toxigenic pasteurella. It takes approximately four months for a total herd immunity to develop and it may be nine months or more before the disease is brought completely under control. In the early stages of a herd breakdown the following could be recommended:
- In-feed medicate sows with trimethoprim/sulpha or sulphadimidine from point of entry into the farrowing house through to weaning. (500g/tonne)
- Inject all piglets with 0.25 to 0.5ml of long-acting oxytetracycline or amoxycillin on days 3, 10 and 15 during sucking.

- Inject pigs similarly at weaning time with 0.5 to 1ml of long-acting antibiotic. This treatment programme should continue for a period of at least 2 months after all sows have been fully vaccinated.
- Medicate the creep rations with oxytetracycline 800g/tonne or trimethoprim/sulpha combinations for 4 weeks post-weaning.
- Sows should be given a booster dose of vaccine 2 to 3 weeks prior to each subsequent farrowing.

Management control and prevention

Many approaches to treatment and prevention of AR are available, but proper management of the pig's environment is paramount to the success of any approach. Control can be attempted in at least 4 ways:

- Total eradication
- Reduction of infection pressure
- Mass medication with antimicrobials to reduce the severity and adverse effects of infection
- Vaccination.

Eradication

Total eradication can only be achieved with confidence by complete depopulation for a 4-week period and repopulation with primary or purchased specific-pathogen-free stock.

Vaccination

Vaccines containing killed *B. bronchioseptica*, *P. multocida* type D and type A, plus toxoids to *P. multocida* type D toxin or *P. multocida* types D and A toxins may be used. Vaccines containing killed bacteria and toxoids are called bacterin/ toxoids.

