

A practical guide to differential diagnosis in swine



2 – Ear necrosis

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The second topic in this series is about ear necrosis. Porcine ear necrosis syndrome (PENS) in pigs has been reported as an increasing health problem in many countries with intensive pig farming.

PENS exhibits as tissue damage to the tips of ears. Researchers have found it occasionally in pigs at three weeks, but it is most common in pigs 5-16 weeks of age. Sometimes only a few pigs are affected and the lesions are barely noticeable, but there are outbreaks where all the pigs are affected and many with extensive lesions.

The disease does not result in mortality, but can make it difficult for a farmer to sell feeder pigs. The cause of this disease is complex and the presumed triggering factors can be divided into infectious and non-infectious agents.

Weissenbacher-Lang (2012) has published a research in which they looked for the causative factors of porcine ear necrosis syndrome (PENS) in 72 pigs, 5.5-10 weeks. Streptococci and staphylococci were isolated from most of the pinnae.

Porcine circovirus 2 (PCV2) could not be detected and porcine reproductive and respiratory syndrome (PRRS) in only 10% of the piglets. As main mycotoxins deoxynivalenol and ergot alkaloids were detected in the feed.

A positive correlation was found between deoxynivalenol and focal epidermal necrosis and bacterial growth in the superficial cell debris. Ergotamine is positively associated with vasculitis and acute phase of PENS.

The findings suggest that PENS is multifactorial in origin and that although infectious agents can be involved in the development of the syndrome they are not the exclusive triggering factor. Also in some cases there is a direct link between disorder of gut micro flora and the levels of endotoxins (lipopolysaccharide in the gut and symptoms of PENS).

Specific actions to prevent ear tip necrosis have proved very difficult to formulate. Clearly, control of co-existing disease is a vital part of any herd health strategy and will help to minimise development of lesions.

Minimising trauma to ear tips by attending

to pen divisions, feed hopper design and water access as well as reducing competition by increasing space provision and decreasing group size may help.

Provision of fresh air may also help. Streptococci and Staphylococci require high humidity to thrive, so increasing air exchange and reducing humidity as well as attention to hygiene could be helpful.

Providing mash feed instead of pellets has been shown to reduce ear tip necrosis. It is not clear whether decreased particle size

during the pressing operation is the cause, or the heat treatment which destroys certain important substances in the feed.

It is also important to promote the healing of wounds so that infections cannot strike quickly. The inhibition of inflammation in the capillaries of the ears could be improved through nutritional measures such as adding higher levels of B-vitamins, introducing certain phytogenics and ensuring the right balance between omega 6 and omega 3 fatty acids. ■

Check list	Corrective action
Potential cause: Trichothecenes (for example deoxynivalenol), ergot alkaloids	
<ul style="list-style-type: none"> • Positive raw materials ELISA, feed HPLC. • Origin of raw materials historically contaminated • Symptoms pertaining to mix of infections • Decline of herd/phase performances 	<ul style="list-style-type: none"> • Check raw materials and feed • Hygiene of feed and water lines • Use Mycofix at suitable inclusion rate
Potential cause: PATHOGENS: Streptococci and Staphylococci	
<ul style="list-style-type: none"> • Epidemiology, symptomatology • Necropsy • Immune-histochemistry, PCR, ELISA 	<ul style="list-style-type: none"> • Biosecurity • Vaccination • Antibiotics
Potential cause: dysbiose of gut micro flora	
<ul style="list-style-type: none"> • Increase of Gram negative bacteria / endotoxin levels • Digestibility and level of protein • Content of fermentable fibres 	<ul style="list-style-type: none"> • Check raw materials and feed formulation • Use Mycofix to bind the endotoxins
Potential cause: Nutritional factors	
<ul style="list-style-type: none"> • Too low digestible protein level • Vitamins levels (B, K, E and anti-oxidants) • Ratio omega 3/omega 6 fatty acids • Mash feed instead of pellets 	<ul style="list-style-type: none"> • Check raw materials and feed formulation • Proper management and nutrition (Fish oil, Mycofix, phytogenics).
Potential cause: Management	
<ul style="list-style-type: none"> • Overcrowding, mixing • Ventilation/oxygen levels • Design of feed hopper and water access 	<ul style="list-style-type: none"> • Increasing space • Check ventilation

References are available from the author on request