



**Porcine Dermatitis and Nephropathy
Syndrome
March 2001
Emerging Disease Notice**

This report reviews current information regarding a worldwide emerging syndrome affecting the pork industry - Porcine Dermatitis and Nephropathy Syndrome (PDNS). This poorly understood syndrome sometimes, but not always, occurs on commercial pig farms simultaneously with another emerging syndrome in swine - Postweaning Multisystemic Wasting Syndrome (PMWS). The relationship between the two syndromes is unclear.

Summary

- The epidemic form of PDNS has similar symptoms to classical swine fever (CSF), and there is a serious problem differentiating the clinical signs and lesions of PDNS from CSF. Distinguishing CSF from PDNS was a problem during the CSF outbreak in the United Kingdom in 2000.
- PDNS mainly affects growing pigs between 12 and 16 weeks of age, and less commonly older animals. The syndrome has been observed in herds of various genetic origin and health status. There is no evidence of other species being affected.
- PDNS is characterized by a systemic vasculitis with marked tropism for the skin and kidneys. The clinical signs include fever, anorexia, and multiple hemorrhages under the skin with predilection for the tail, hindquarters, and ears. Massively enlarged lymph nodes and glomerulonephritis are also observed.
- There is evidence that the syndrome is immune mediated, although the precise etiology remains unknown. Porcine reproductive and respiratory syndrome virus (PRRSV) has been implicated as a possible contributing etiological agent, together with *Pasteurella multocida* and *Streptococcus* spp secondary infections.
- Methods for preventing or treating the syndrome are unknown at this time. However, biosecurity precautions such as isolating incoming pigs and reducing co-mingling pigs of different ages are recommended.

Background

A new clinicopathological condition in swine called porcine dermatitis and nephropathy syndrome (PDNS) has drawn considerable attention lately from the pork industry. PDNS was first reported in the UK in 1993. The syndrome is a serious concern worldwide because the clinical signs and lesions closely resemble those of classical swine fever and African swine fever. The syndrome is being diagnosed with increasing frequency in swine herds in the United States, Canada, European Union, and Asia.

PDNS mainly affects growing pigs between 12 and 16 weeks of age, and less commonly older animals. The syndrome has been observed in herds of various genetic origin and health status. There is no evidence of other species being affected. As with many syndromes there is variation from farm to farm on numbers affected. Within a herd, clinical signs may occur sporadically in a few pigs, thus the syndrome could remain undiagnosed. Alternatively, signs may occur in a bigger proportion of the herd and be economically damaging. It appears that some litters on the farm are affected to a great extent, while other litters may be completely unaffected.

The prevalence of the syndrome in the affected herds is usually low (<1%), but, during outbreaks, morbidity and mortality on some farms has increased to over 20%. There are additional losses due to affects on performance and the need to cull pigs that survive but stop growing. Additionally, prevalence of other diseases can increase as a result of the pig's weakened immune system.

Sporadic cases were seen previously but significant outbreaks of PDNS were noted in the second half of 1999 in England. It is estimated that approximately 9% of herds in England are affected. In the United States the first documented cases were in two herds of growing pigs in Michigan in 1997. To date this syndrome is not reportable, and there are no accurate statistics pertinent to PDNS incidence in the United States.

Clinical and Pathological Signs

The acute form of PDNS is characterized by multiple hemorrhages under the skin, grossly enlarged lymph nodes throughout the body, and glomerulonephritis. Hemorrhages appear as circular red lesions located particularly around the tail, hindquarters and ears. In addition, small blood vessels in many organs become damaged, particularly in the kidney. Mildly affected pigs may only show skin lesions and be afebrile and alert. These animals usually recover without treatment. Not all animals presenting cutaneous lesions develop renal lesions, and vice versa.

Severely affected animals show a variety of other clinical signs including anorexia, depression, weight loss, watery diarrhea or black feces, and subcutaneous edema. Many of these animals die within a few days after onset of clinical signs. The prognosis for affected pigs is dependent on the severity of the vascular lesions found in internal organs, particularly within the kidneys in which

severe and fatal glomerulonephritis may develop.

Etiology

Diagnosis

There is no definitive test for PDNS. The diagnosis is based on the age of affected pigs, the clinical picture, post-mortem findings, laboratory tests (presence of immunoreactants within affected vessel walls and within renal glomeruli), the lack of response to treatment, and elimination of other possible causes, particularly classical swine fever.

Differential diagnosis includes classical swine fever, African swine fever, swine erysipelas, and porcine stress syndrome. Bacterial diseases causing reddish discoloration of skin, petechia, or cyanosis include infections by *Actinobacillus suis*, *Actinobacillus pleuropneumoniae*, *Streptococcus suis*, *Hemophilus parasuis*, and *salmonellosis*.

Treatment and Prevention

There is no known effective treatment. Antimicrobial agents have not been successful. Pigs are reported to respond to injections of corticosteroids with improved growth rates and reduced mortality.

Prevention of PDNS remains problematic because the cause has not yet been established. Biosecurity precautions such as isolating incoming pigs, restriction of movements of pigs between farms within the affected geographical zone, and reducing co-mingling pigs of different ages are recommended.

Extensive research is being carried out in a number of countries - Canada, the United States, Spain, France, Belgium and the United Kingdom. The most current information about this syndrome can be found on the following web sites:

<http://www.thepigsite.com>

<http://www.pighealth.com>

<http://www.npa-uk.net/health.html>

If you seek more information or wish to comment on this worksheet, please contact Milo Muller at (970) 490-7844.

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