

PMWS: US case investigations

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Introduction

Since the late 1990s, postweaning multi-systemic wasting syndrome (PMWS) has been identified as a significant problem in many parts of the world.¹ Today, porcine circovirus type 2 (PCV-2) is considered by many to be the causative agent of PMWS.^{2,3} The clinical signs and pathology relating to the diagnosis of PMWS have been well described.^{4,5} However, no specific and effective intervention has been identified. Although PCV-2 is the postulated causative agent of PMWS, PCV-2 is a ubiquitous virus that has been present for two to three decades in almost 100% of the pig populations around the globe. Multiple factors, such as co-infections, vaccine-induced immunostimulation, overcrowding, mold, stress, and genetics have been reported to contribute to the ability of the PCV-2 infection to express itself as PMWS.^{6,7,8}

A primary objective of this prospective study was to identify risk factors associated with the diagnosis of PMWS in US field cases utilizing sentinel veterinary practices across the Midwest.

Methods

Seventeen sentinel veterinary practices were recruited across Iowa and southern Minnesota to participate. One veterinarian from each practice was selected as the key contact person and trained in the study protocols. With minor modifications, a well accepted clinical case criterion for PMWS⁹ was utilized as a standard to enroll farms. Cases meeting the clinical case definition were enrolled in the study (see Appendix 1). Practitioners submitted predetermined samples to the diagnostic laboratory and completed a producer survey for each enrolled case. The producer survey was designed to determine the disease history and management practices at the farm. The diagnostic laboratory submissions were linked to the producer surveys to allow evaluation of diagnostic results, co-infections, and management practices.

Results

Over a twelve month period, the sentinel practices investigated and submitted 101 cases that met the clinical case definition for PMWS provided to them. Of the 101 sub-

missions, 69 cases were confirmed to be PMWS-positive and 32 were confirmed to be PMWS-negative based on the laboratory case criteria for diagnosis of PMWS.⁹ The positive and negative cases were compared in an attempt to determine risk factors for the development of PMWS as described by our case definition (see Appendix 1).

The management risk factors that were examined included the following:

- source herd disease history
- site disease history
- vaccination practices
- housing
- floor type
- pig flow
- pig density
- pig age

As stated above, the presence of coinfections with PCV-2 has been proposed as a significant risk factor for the development of PMWS. The following coinfections were recorded as reported in the diagnostic lab reports for consideration.

- porcine reproductive and respiratory disease virus (PRRSV)
- swine influenza virus (SIV)
- mycoplasma
- *H. parasuis*
- *S. suis*
- *Salmonella* spp.
- other

The results of the trial are still pending.

References

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Appendix 1

Clinical description

PMWS is a condition of nursery and grower pigs characterized by the failure to grow at the same rate as penmates. Emaciation in affected pigs is progressive with failure to respond to antibiotic therapy. In addition, affected pigs may display dyspnea, which is also progressive and non-responsive to antibiotics.

Clinical case definition

An illness characterized by the following:

Wasting, ill thrift, and failure to thrive in greater than 2% of pigs from six to eighteen weeks of age with or without other clinical signs. Anemia, icterus, progressive dyspnea, and emaciation are commonly observed. Gross lesions may include mottled, non-collapsed lungs and moderate to severe lymph node enlargement.

Laboratory criteria for diagnosis

- Detection of PCV-2 by virus isolation, PCR, and/or PCV-2 antigen by immunohistochemistry and associated with the lesion (required).
- Depletion of lymphocytes from lymphoid tissues (required). Histiocytic inflammatory infiltration.

A “confirmed case” was defined as a clinical-compatible case that was laboratory confirmed.

Comment

Laboratory testing should be performed or confirmed by qualified laboratories. A respiratory syndrome, commonly known as porcine respiratory disease complex (PRDC), can cause similar clinical signs and may or may not meet the laboratory criteria for PMWS diagnosis.

