International Pig Topics

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Porcine circoviruses I

Introduction

The original porcine circovirus was apathogenic, isolated as a contaminant of cell culture and designated as type 1 (PCV 1). Then, in the late 1990s, another porcine circovirus was isolated that was associated with disease (PCV 2).

PCV 2 is associated with postweaning multisystemic wasting syndrome (PMWS), porcine dermatitis and nephropathy syndrome (PDNS) and porcine respiratory and reproductive syndrome (PRRS). All these are sometimes referred to as 'porcine circovirus disease'.

Since 2007, a PCV 2 vaccine has been available and following its use losses due to PMWS and PCV 2 have been greatly reduced.

The virus

Examination of PCV 2 isolates shows them to be closely related irrespective of source. Most isolated are either PCV 2a or 2b and both probably had a common ancestor. PCV 2a was by far the most common isolate until the early part of this century, before PCV 2b assumed this role. The emergence of PCV 2b was associated with a more severe clinical picture.

Pigs may be infected with more than one strain of PCV 2.

Epidemiology

PCV 1 is widespread in the pig population but it is present at a lower level than PCV 2.

Oronasal exposure is the primary route of transmission but PCV 2 virus has been found in other bodily secretions including semen. Transplacental transmission has been encountered and naïve sows inseminated with PCV 2 contaminated semen have shown reproductive failure and their foetuses were infected with PCV 2 virus.

The disease

PCV 2a and PCV 2b can both cause PMWS but the latter virus is probably more virulent. PCV infects monocytes and macrophages and the former probably disseminates the PCV virus around the pig's body.

PCV 2 viraemia can be detected seven days post infection and peaks 1-2 weeks later and often lasts for six months or longer. The highest concentrations of PCV 2 occur in lymphoid tissue but the virus can be found in other organs such as the kidneys and the respiratory tract.