

COMPARATIVE HISTOPATHOLOGICAL FINDINGS OF DISEASED PIGS INFECTED WITH PORCINE CIRCOVIRUS 2 (PCV-2) AND 3 (PCV-3)



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OBJECTIVE

Compare the histopathological findings observed in selected pigs affected by PCV-2-SD and PCV-3-AD.

METHODOLOGY

- Ten pig cases, hematoxylin-eosin stained, were reevaluated microscopically for each viral infection regarding Table 1.
- The definitive diagnostic tests were immununohistochemistry (IHC) for PCV-2 cases and *in situ* hybridization (ISH) for PCV-3 cases.

Table 1. Summary of the scoring criteria used for lesion and staining quantification

SCORE	Semi-quantification of microscopic alterations	IHC in lymphoid tissues	ISH
-	Absent	Absent	Absent
+	Low presence	Present in follicular area	Mild presence
++	Moderate presence	Present in the follicular and parafollicular area	Moderate presence
+++	Marked presence	Present in all the tissue	Marked presence
NA	Non available tissue, IHC or ISH		

RESULTS

PCV-2-SD affected pigs

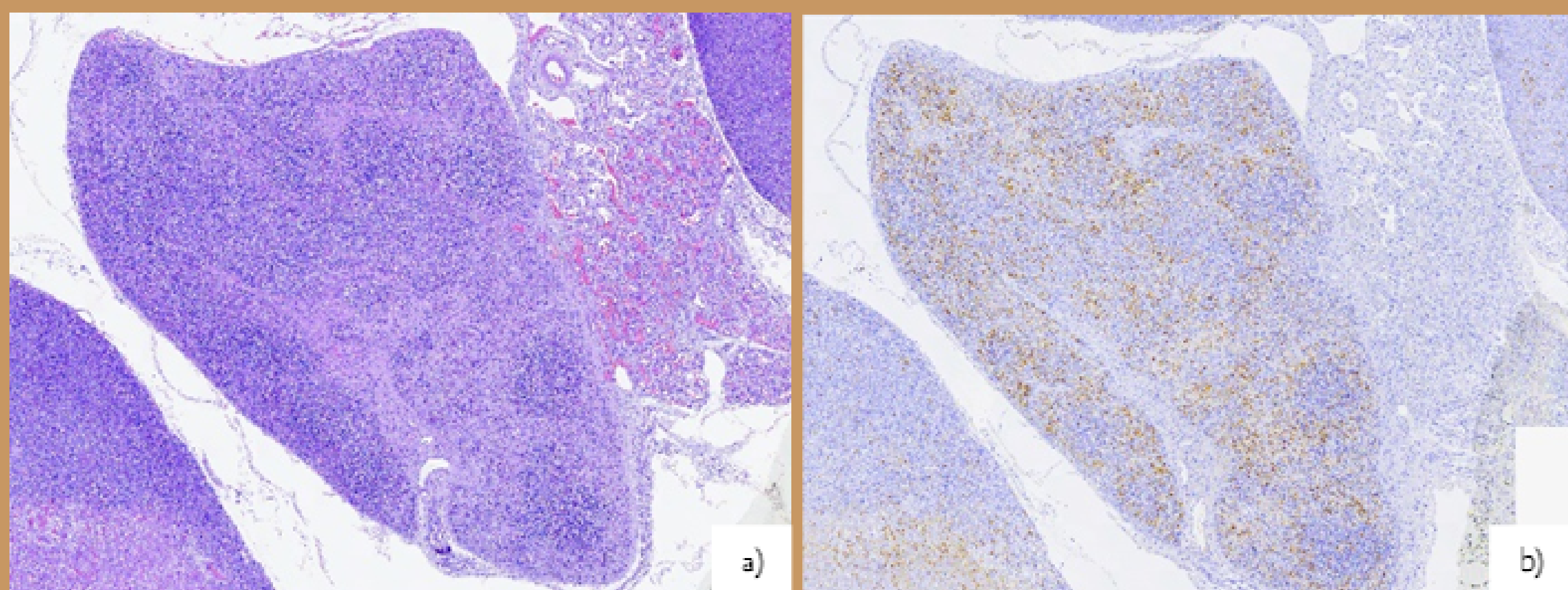


Figure 1. (a) Severe lymphocyte depletion in the mesenteric lymph node from the case N-00014-19. H&E. (b) Moderate to high amount of PCV-2 antigen (brown staining) within the same lymph node. PCV-2 IHC, hematoxylin counterstain.

Table 2. Summary of lymphoid lesions and IHC

LD	GI	MGC	ICIB	LN	IHC
-: 0	-:0	-: 90%	-:20%	-:80%	-:0
+: 0	+:0	+:10%	+:30%	+:20%	+:0
++: 50%	++:0	++:0	++:30%	++:0	++:10%
+++: 50%	+++: 100%	+++:0	+++:20%	+++:0	+++:90%

Abbreviations: lymphocyte depletion (LD), granulomatous inflammation (GI), multinucleated giant cells (MGC), intracytoplasmic inclusion bodies (ICIB) and necrotic lymphadenitis (NL)

PCV-3-AD affected pigs

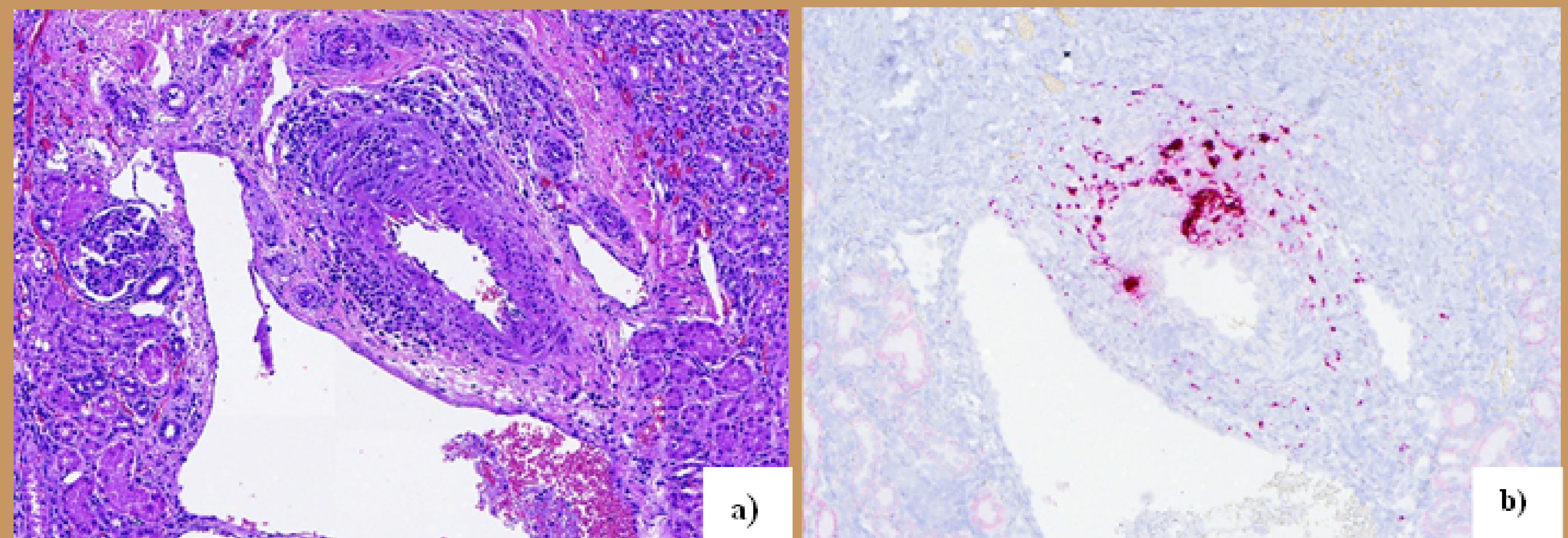


Figure 2. (a) Kidney artery showing periarterial mononuclear inflammation from the case N-00538-10. H&E. (b) Presence of PCV-3 genome within the damaged arterial wall from the same case. PCV-3 ISH, hematoxylin counterstain.

Table 3. Summary of vascular lesions (periarteritis/arteritis) and ISH

M / ISH	S / ISH	Li/ISH	K/ISH	Lu/ISH	Me/ISH
-: 20% / 0	-: 10% / 0	-: 10% / 0	-: 30% / 0	-: 60% / 0	-: 0 / 0
+: 60% / 10%	+: 60% / 10%	+: 60% / 20%	+: 50% / 60%	+: 40% / 20%	+: 70% / 10%
++: 20% / 20%	++: 30% / 0	++: 30% / 30%	++: 20% / 0	++: 0 / 40%	++: 20% / 20%
+++: 0 / 40%	+++: 10% / 70%	+++: 0 / 10%	+++: 0 / 10%	+++: 0 / 10%	+++: 10% / 30%
NA: 0 / 30%	NA: 0 / 20%	NA: 0 / 40%	NA: 0 / 30%	NA: 0 / 30%	NA: 0 / 40%

Abbreviations: myocardium (M), spleen (S), liver (Li), kidney (K), lung (Lu) and mesentery (Me)

CONCLUSIONS

- PCV-2-SD and PCV-3-AD may exhibit similar clinical signs, but they can be distinguished from each other at histopathological level.
- PCV-2-SD consistently reveals lymphocyte depletion and granulomatous inflammation. The presence of ICIB serves as a strong confirmation of the disease.
- PCV-3-AD typically shows periarteritis, although it is not always observed. Due to the absence of other microscopic alterations, it is imperative to conduct ISH to achieve a definitive diagnosis for PCV-3-AD.