

## Outbreak investigations: *Mycoplasma hyorhinis* and conjunctivitis in pigs

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### Key points:

- Conjunctivitis in pigs has been associated with various infectious agents, among them, *Mycoplasma hyorhinis*.
- We investigated various outbreaks of conjunctivitis in pigs without apparent non-infectious predisposing factors.

**Introduction:** Conjunctivitis was clinically identified in three herds, affecting pigs from 8 to 22 weeks of age (Fig.1A and B). Anorexia and failure to thrive were the major concern of veterinarians and producers. Non-infectious environmental causes of conjunctivitis (such as NH<sub>3</sub>, dust and trauma) were investigated but not found by veterinarians.

**Methods:** Eye swabs and tissues were collected from pigs at early and late stages of the clinical disease, from pigs in-contact with pen mates with no clinical signs, and from pigs a herd without history of conjunctivitis (age-matched). The diagnostic investigations for potential pathogens were conducted at the University of Minnesota VDL. Histological examination of the tissues along with viral, bacterial and fungal culture, immunohistochemistry (IHC) and/or PCR were performed for differential diagnostics (Classical Swine Fever virus, African Swine Fever virus, Pseudorabies virus, Chlamydia, Porcine Cytomegalovirus, Influenza A virus, PRRSv).

**Results:** Affected pigs from early and late stage of the disease showed lymphoplasmocytic conjunctivitis, observed predominantly in the palpebral conjunctiva with minimal or no extension to the ocular conjunctiva (Fig. 1C). Other potential etiologies of swine conjunctivitis were ruled out. Eye swabs and conjunctival tissues from clinically affected animals and non-affected contact pen mates were positive for *M. hyorhinis* by PCR and culture. *In situ* hybridization was performed by targeting the 16S RNA gene of *M. hyorhinis*. Positive signals (Fig.1D) were observed associated with histological lesions on the conjunctival epithelium, and connective tissue where the lamina propria was exposed due to the ulcerative lesions. Mycoplasma-like organisms have been demonstrated to be involved in sporadic outbreaks of conjunctivitis in swine.<sup>1,2</sup> However, the significance of Mycoplasmas in the etiology of the conjunctivitis in swine is still unclear. Comprehensive studies involving whole genome comparison among *M. hyorhinis* strains isolated from clinical cases of conjunctivitis, polyserositis and asymptomatic carriers are warranted to clarify potential genotypic differences associated with a specific disease phenotype.

### References

1. Friis, N.F., 1976. A serologic variant of *Mycoplasma hyorhinis* recovered from the conjunctiva of swine. *Acta Veterinaria Scandinavica*, 17(3), pp.343-353.
2. Rogers, D.G., Frey, M.L. and Hogg, A., 1991. Conjunctivitis associated with a Mycoplasma-like organism in swine. *Journal of the American Veterinary Medical Association*, 198(3), pp.450-452.

**Figure 1. *M. hyorhinis*-associated conjunctivitis.** Early- (a) and late-stages (b) of the disease in affected pigs. Different degrees of serous/mucopurulent ocular discharges were present in association with palpebral edema; c) infiltration of inflammatory cells (subepithelial and perivascular) in an affected ocular conjunctiva; d) *M. hyorhinis* positive signals (arrows) detected by in situ hybridization

