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Review of *Mycoplasma hyorhinis*

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Mycoplasma hyorhinis is a common inhabitant of the respiratory tract of pigs. This bacterium can be isolated from the nasal cavity, tonsils and lungs of healthy pigs. It is believed that the bacterium is transmitted from the sow to its piglets during the first weeks of life and between pigs in the nursery. However, under favorable conditions (stress or infection with other pathogens), *M. hyorhinis* can become systemic causing polyserositis and/or arthritis, mainly in nursery pigs. Clinical signs include fever, dyspnea, swollen joints, lameness, reluctance to move and growth delay. The polyserositis consists of fibrinous or fibrinopurulent pleuritis, pericarditis and/or peritonitis. If the pig survives, lesions progress to chronic serositis with formation of adhesions. The arthritis is characterized by hypertrophy and hyperemia of the synovial membrane and lymphocyte infiltration with a serosanguinolent exudate, sometimes containing fibrin. This disease has been experimentally reproduced in multiple studies and under different conditions. Antibiotic treatment of *M. hyorhinis* infections is only successful during the early stages of disease. *M. hyorhinis* is sensitive to lincomycin, tiamulin and tylosin.

In addition to polyserositis and arthritis, *M. hyorhinis* has been associated with a number of clinical presentations including rhinitis, pneumonia, otitis, conjunctivitis and abortions. However, the significance of *M. hyorhinis* in these disease presentations is unclear. It is important to remember that *M. hyorhinis* is a ubiquitous organism that grows easily in culture media and therefore isolation of *M. hyorhinis* from a diseased animal does not imply causality. The role of *M. hyorhinis* in swine pneumonia has been a question of debate. *M. hyorhinis* is isolated more frequently in pneumonic than in normal lungs. However, experimental inoculation of pigs with *M. hyorhinis* rarely produces pneumonia and, when it does, it is mild and only observed in a small percentage of the infected pigs.

During the last years, we have observed an increase in the number of cases of *M. hyorhinis* polyserositis. It is not clear whether that reflects a real increase in the prevalence of this disease or it is the result of an improved ability to detect *M. hyorhinis* due to the introduction of PCR. At the Minnesota Veterinary Diagnostic Laboratory, all

cases of serositis or arthritis received are tested for *M. hyorhinis*. Of these, approximately 55% of polyserositis samples and 12% of lameness samples are positive by PCR (Figure 1).

Coinfections with other respiratory pathogens are common in cases of polyserositis associated with *M. hyorhinis*. In fact, *M. hyorhinis* PCR-positive cases are more likely to be also positive for PRRSV, *H. parasuis*, *S. suis*, *P. multocida*, *B. bronchiseptica* and swine influenza virus (Figure 2).

The association with *H. parasuis* is particularly interesting. In most cases of polyserositis are either positive for both pathogens or negative for both pathogens (Table 1). This could indicate a synergistic mechanism or, more

Figure 1: Number of samples that tested positive and negative for *Mycoplasma hyorhinis* by PCR during three months at the Minnesota Veterinary Diagnostic Laboratory

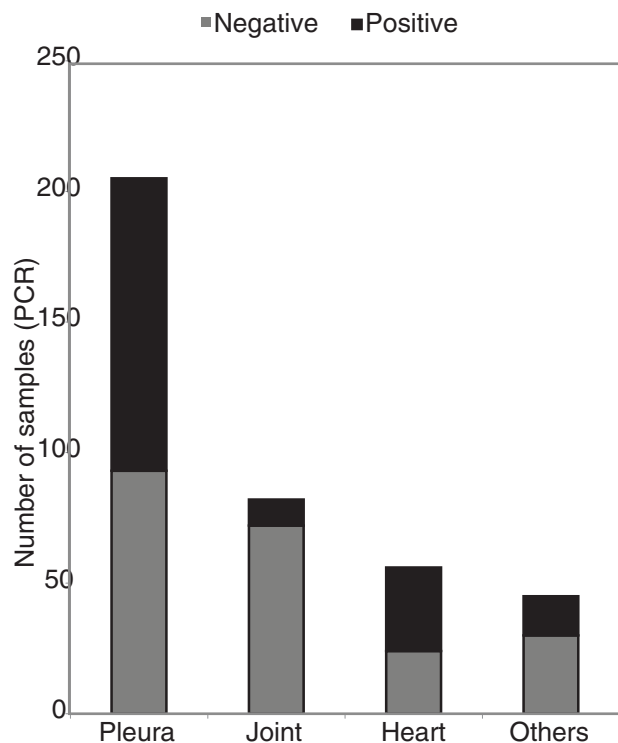


Figure 2: Proportion of positive cases for common swine respiratory pathogens split by the result of *M. hyorhinis* PCR. Note: a positive case is one that has at least one positive sample (not all the samples within a case need to be positive).

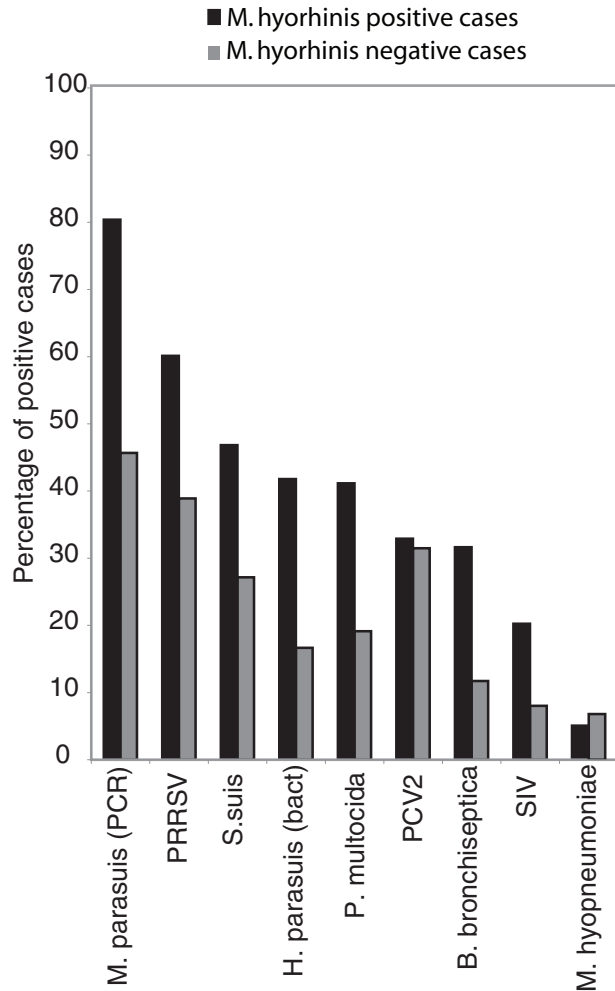


Table 1: Percentage of polyserositis and arthritis cases that are positive and negative for *M. hyorhinis* by PCR, split by the *H. parasuis* PCR result.

		<i>H. parasuis</i>	
		POS	NEG
<i>M. hyorhinis</i>	POS	40	10
	NEG	14	36

likely, that both pathogens are secondary to a common triggering factor such as respiratory disease.

Mycoplasma hyorhinis has been recognized as a cause of polyserositis and arthritis in pigs for decades. However, in the last years we have observed an increase in the rate of detection of this pathogen. In most cases, *M. hyorhinis* seems to act as a secondary pathogen. Nevertheless, *M. hyorhinis* is an important contributor to disease and mortality in nursery pigs in North America.



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