

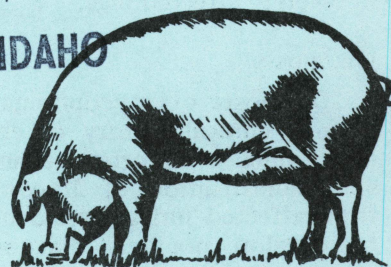


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Mycoplasmal (Enzootic) Pneumonia of Swine

David P. Olson, Extension Veterinarian
Gene W. Gibson, Extension Animal Scientist

Mycoplasma pneumonia is the most prevalent and probably the most important disease of swine today. The disease is worldwide in distribution and causes considerable economic losses — losses from unthriftiness and poor feed utilization in less severe cases, or death in more severe cases. Annual losses from the disease in the United States range between \$120 and \$200 million.

The disease is also called porcine enzootic pneumonia and enzootic pneumonia of swine. Pigs are the only known host naturally affected by the disease. Research has failed to show that the disease exists naturally in other hosts. Scientists also have been unsuccessful in reproducing the disease in other domestic and laboratory animal species.

Etiology

Mycoplasma pneumonia was first thought to be caused by a viral agent. However, work in the early 1960's in England and the United States confirmed that the disease is caused by the bacterium *Mycoplasma hyopneumoniae*. The organism is very small and difficult to culture in the laboratory because of unusual growth requirements and the need for special equipment.

Transmission

The disease spreads within a herd by direct contact between infected and susceptible pigs, and indirectly by inhalation of the airborne organisms. Young piglets often contract the disease from their infected dams. Similarly, the disease will spread from infected to noninfected weaned pigs when they are mixed together for the first time. Mycoplasma organisms survive for only a few minutes outside the animal body so there is little chance for the disease to be spread by other animal species or a contaminated environment. Generally, the disease is introduced into a herd by purchase of infected feeder pigs or replacement breeding stock.

Clinical Signs and Pathologic Changes

All ages of pigs are susceptible to mycoplasma pneumonia infection although older sows may be somewhat less susceptible. The disease is basically a chronic lung infection that can appear any time. It is characterized clinically by large numbers of affected pigs and usually a low mortality rate.

Symptoms begin 10 to 16 days after exposure. In young pigs, the disease first appears at 3 to 10 weeks of age. The pigs may begin sneezing and have a transient diarrhea for 2 to 3 days, then will develop a severe, dry and nonproductive cough. The disease in older pigs is manifested only as a cough without sneezing or diarrhea. The coughing is most evident when the pigs are first aroused in the morning and when they are vigorously exercised. The cough will continue for 1 to 3 weeks and then may subside or it may persist indefinitely.

Pigs that no longer cough and appear fully recovered will often relapse and begin coughing again at 4 months of age. Other respiratory symptoms such as labored breathing and thumping of the sides are usually not obvious. Although their appetite may remain apparently unaffected, the animals fail to grow normally, become stunted and lose condition.

Mycoplasma pneumonia becomes most severe whenever the pigs also have a lungworm infestation or when larvae from *Ascarid* intestinal worms are migrating through the lungs. In either case, the mortality rate may reach 25%. Environmental stresses such as sudden fluctuations in temperature and exposure to drafts and excessive dampness will also accentuate the severity of the disease. Overall, growth and production of an animal infected with mycoplasma pneumonia are directly correlated with lung lesions i.e., the more severe the disease, the poorer the performance. Many animals with a milder form of the disease will grow and be reasonably efficient.

Postmortem examination shows the affected portions of the lungs are well demarcated, are firm

and liver-like to the touch and appear plum-colored or gray. The remainder of the lung tissue appears normal. The lower portions of the forward-most lobes of the lungs are usually affected first. Microscopic and ultrastructural examinations of affected lungs have shown that the mycoplasmal organisms infect the bronchi and bronchioles. Lesions develop to a maximum degree in 21 to 28 days after exposure in severely affected pigs.

Diagnosis

Diagnosis of mycoplasmal pneumonia is based upon a clinical history of chronic pneumonia in a herd, plus postmortem examination and isolation and identification of *Mycoplasma hyopneumoniae* from affected lungs. Research is currently underway to develop practical diagnostic blood tests. The disease must be differentiated primarily from swine influenza. Coughing due to inhalation of dust or extensive but uncomplicated migration of *Ascarid* or lungworm larvae through the lungs must also be considered.

Treatment

Chronic mycoplasmal pneumonia cannot be cured by treatment with antibiotics such as tetracycline, oxytetracycline, penicillin and streptomycin or sulfonamides. In the face of infection, however, these drugs will help control secondary infections by other microorganisms. Mycoplasmal pneumonia can be prevented by feeding broad spectrum antibiotics to pigs before they are exposed but costs of the quantities needed would be prohibitive.

Prevention and Control

Prevention and control of mycoplasmal pneumonia is complicated since chronically infected animals will often continue to carry and transmit the disease organisms for more than a year. Nonetheless, methods of detecting and isolating clinically infected animals and controlled rearing of breeding stock will help swine producers obtain mycoplasmal pneumonia-free herds. Repopulation with specific pathogen free (SPF) breeding stock has also been successful in establishing mycoplasmal pneumonia-free herds. Incidence of the disease can be reduced by selecting older breeding sows because they have a lower frequency of disease and a greater level of immunity.

The overall harmful effects of the disease can be reduced by good husbandry and special care of affected animals. The following measures should help improve weight gains and reduce death losses in severely affected pigs:

1. Avoid sudden changes in temperature.
 2. Treat affected animals with antibiotics or sulfonamides to control secondary bacterial infections.
 3. Provide good nutrition and warm, dry, draft-free quarters.
 4. Reduce the incidence of intestinal roundworms (*Ascarids*) and lungworms by treatment with appropriate anthelmintics.
 5. Have the herd inspected on a routine basis by your veterinarian for signs of the disease.
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