VM172

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Understanding Equine Strangles: Signs of Disease, Management and Prevention [1]

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Understanding Equine Strangles

Strangles is caused by bacterial infection with *Streptococcus equi* subspecies *equi* (referred to as *S. equi*). The bacteria typically infect the upper airway and lymph nodes of the head and neck. The disease has been in the equine population for centuries, and was first reported in 1251. The infection is highly contagious in horse populations and can recur on farms with previous outbreaks of the disease. It is one of the most commonly diagnosed contagious diseases of the horse worldwide. The persistence of this infection on farms is multi-factorial. The bacteria can survive on water sources (buckets and troughs) for over a month, but the primary source of recurrent infections is most likely asymptomatic carrier horses, that can shed the bacteria to other horses for months to years.

Clinical Signs of Disease

Historically, strangles got its name because affected horses were sometimes suffocated from large, infected lymph nodes that obstructed their upper airway or trachea. The hallmark clinical signs of infection are fever (temperature >101.5ʃF), nasal discharge, and enlarged submandibular lymph nodes (in the space between the lower jaw bones) which ultimately abscess. Purulent nasal discharge is typically present, although it may initially be clear. The retropharyngeal lymph nodes, which are behind the throatlatch, may also become enlarged and abscess. These will sometimes drain into the guttural pouches, which are air-filled spaces within the head that are an expansion of the Eustachian tubes. Guttural pouch infection and pus accumulation (empyema) are often the result of retrophayngeal lymph nodes that abscess and rupture into the guttural pouches. Guttural pouch infection may also occur from bacterial entrance through the pharynx (throat). Anorexia, depression, and difficulty swallowing may also accompany signs of infection.

Complications of Disease

Fortunately, although strangles is highly contagious and can affect many horses on a farm, most horses with infection recover without complication. The occurrence of complications will increase the likelihood of death from the infection (from 8% to 40% of cases). Complications from

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infection with *S. equi* include spread of the infection to lymph nodes other than the head and neck (also known as metastatic infection or bastard strangles), immune mediated disease (such as purpura hemorrhagica), muscle disease and pain, and lack of milk production. Studies report complications to occur in approximately 20% of strangles cases. Horses that develop complicated infection typically require antibiotic and additional therapies based on veterinary examination.

Diagnosis

Clinical signs of strangles strongly suggest the diagnosis. However, definitive diagnosis is made by culture of the bacteria from a sample of purulent discharge (from the nose or guttural pouch), a lymph node abscess, or a nasal-pharyngeal wash. Another available test, polymerase chair reaction (PCR), is very sensitive test and detects bacterial DNA. PCR cannot tell the difference between live and dead bacteria, so is typically used in conjunction with culture. However, if consecutive PCRs are negative, the horse is unlikely to have strangles. The real challenge is diagnosing horses that are asymptomatic carriers. Anywhere from 4-50% of the horses on farms with recurring strangles are carriers of the infection. Most horses will begin shedding (bacteria can be transmitted from nasal secretions to other horses) the bacteria from their nasal passages a couple of days after the onset of fever. Bacterial shedding occurs intermittently for several weeks. Some horses may continue to shed the bacteria for months to even years, functioning as a continual source of new infections on the farm. All diagnostic tests and treatment of affected cases should be done under veterinary supervision.

Treatment

Antibiotic therapy for the treatment of strangles remains controversial. Uncomplicated cases of submandibular lymph node abscessation do not require antibiotic therapy in this author's opinion. Complicated cases and those requiring tracheostomy for management of respiratory distress generally do require antibiotic and other supportive therapies. There is some evidence that treatment with antibiotics (such as penicillin) at the first sign of fever and in horses with no lymph node enlargement may prevent infection. However, early antibiotic treatment will also prevent these cases from developing immunity to the infection, and subsequently makes them susceptible to reinfection earlier.

Management of an Outbreak

The first and most important thing to remember in a suspected outbreak of strangles is to contact your veterinarian right away to determine the diagnosis and the best control practices for your particular farm. Strangles is a reportable disease in some states, and the state veterinarian may need to be notified as well. Movement of any horses on or off the farm should be stopped, and new horses should not be introduced. Take the temperature of all horses on the farm twice daily. Normal rectal temperature is 99-101.5°F. Monitoring the rectal temperature and isolating horses at the first sign of fever is one of the most effective ways to stop the spread of infection. Infected horses can transmit the bacteria to healthy horses 1-2 days after they develop a fever.

An isolated area should be set up for horses with fever and any other signs of illness (nasal discharge, etc). Extreme care should be taken not to mix horses with infection, horses exposed to horses with strangles, and unexposed horses. Ideally, three groups of horses should be created: 1) infected horses 2) horses that have been exposed to or contacted infected horses and 3) clean horses with no exposure. No nose to nose contact or shared water buckets should occur among the groups! Unexposed horses should be kept in a "clean" area, and should ideally have separate caretakers, cleaning equipment, grooming equipment, water troughs and pasture. People and equipment can transfer the infection from horse to horse. Extreme care, handwashing, and disinfection of supplies must be observed by everyone involved. If different individuals cannot care for infected and healthy horses, then healthy horses should always be dealt with first. Dedicated protective clothing such as boots, gowns or coveralls, and gloves should be utilized when dealing with infected horses.

Thorough cleaning and disinfection is critical when dealing with any infectious disease. All water troughs should be thoroughly cleaned and disinfected daily during an outbreak. Read the label instructions on disinfectants to be sure they are used at the correct dilution and are active against *S. equi*. All surfaces and stalls should be disinfected following removal of manure and organic material. Manure will inactivate bleach and iodine type solutions. Manure and waste feed from infected horses should be composted in an isolated location, not spread on the pastures. Pastures that were utilized for sick horses should be rested for a minimum of 4 weeks. Fortunately, *S. equi* does not live for a prolonged time in the soil (about 3 days).

A serious challenge when dealing with an outbreak of strangles is identifying the horses that are carriers of the bacteria but are not showing any signs of illness. These horses can shed the bacteria for weeks, months, or even years, and serve as a continual source of reinfection for your farm. Ideally, all horses on the farm should be tested for strangles. The bacterial culture combined with PCR identifies carriers with a 90% success rate. Nasal pharyngeal swabs or washes can be done to sample the horses for infection. The washes improve the chance of identifying carrier horses. Additionally, all sick horses should test negative 3 consecutive times before being put back with healthy horses. Previously infected horses can shed the bacteria for weeks to months, or even years in rare cases. That is the reason 3 negative test samples are recommended prior to reintroduction to the healthy herd. For the most accurate diagnosis of carriers and horses without obvious clinical signs, upper airway and guttural pouch endoscopy can be performed. This procedure allows for identification and culture of infections that can develop in the guttural pouch. Although disinfection, isolation procedures, and diagnosis can be costly; they are certainly cheaper than additional outbreaks on your farm.

Vaccination

Vaccination is one method for prevention and control of infection with *S. equi*. However, vaccination cannot guarantee disease prevention. With strangles, vaccination will most likely reduce the severity of disease in the majority of horses infected after they are vaccinated. Available vaccines can be administered by intramuscular and intranasal routes. Improper administration of the vaccination can result in poor protection against infection and/or complications at the site of injection; therefore, administration by your veterinarian is recommended. The intranasal vaccination results in the best local immunity.

Vaccination is generally not recommended during an outbreak of strangles. If there are horses on the farm with no clinical signs of infection (fever, nasal discharge) and no known contact with sick horses, vaccination may be considered. Horses that have had the disease within the previous year also do not need to be vaccinated. Once recovered from an active infection, 75% of horses have immunity for 1-2 years. Vaccination of horses recently exposed to strangles (that have high antibody levels) may result in purpura hemorrhagica. Purpura hemorrhagica is caused by an over-active immune response within the horse, which can result in limb swelling, swelling of the head, and small hemorrhages on the gums. Vaccination is only recommended in healthy horses with no fever or nasal discharge.

So should you vaccinate your horse? The answer to that question depends on your horse's chance of exposure to infection, and your personal comfort with the level of risk. The decision should be made in conjunction with your veterinarian. Generally, if your horse travels routinely and is exposed to varied or new populations of horses regularly, vaccination should be considered. Broodmares on farms with a history of strangles should also be vaccinated prior to foaling. Remember that the initial vaccination requires a booster dose before being effective against infection. It takes about one month from vaccination for immunity to develop. Therefore, be certain to vaccinate your horse in advance of transport or potential exposure to new horses.

Additional Preventative Measures

If you have never had strangles on your farm or in your horse, you probably don't want it either. Here are some additional suggestions for reducing your horse and your farm's risk for infection:

- Require a current health certificate for new horse arrivals on the farm.
- Ask owners of new horses about a history of strangles and consider testing new horses to see if they are shedding the bacteria.
- If feasible, quarantine new arrivals for 2-3 weeks and monitor their temperature.
- All horses should have individual water buckets that are routinely disinfected.
- If shared water troughs are utilized, they should be routinely disinfected.When traveling to shows, minimize your horse's exposure by bringing your own feed, buckets, and equipment. Minimize use of shared stalls or pastures at show grounds.
- If horses are pastured together, group them according to their age and risk level (for example, all weanlings together, all broodmares together).

In summary, reducing your horse's exposure to unknown horses and utilizing routine disinfection measures will decrease the chance of infection with strangles. If your farm does have an outbreak, isolation and containment of sick horses will help reduce the spread of infection. The American College of Veterinary Internal Medicine (ACVIM) has developed strangles control guidelines which were the basis for the recommendations here. That document can be downloaded at http://www.acvim.org/uploadedFiles/Consensus_Statements/Strangles.pdf to assist owners and veterinarians with detailed recommendations for diagnosis, treatment, and control of infection.

Further Reading:

1. Sweeney CR, Timoney JF, Newton JR, and Hines MT. *Streptococcus equi* Infections in Horses: Guidelines for Treatment, Control, and Prevention of Strangles. *J Vet Intern Med* 2005; 19: 123-134.
2. Loving, NS. Strangles. *The Horse*; Nov 1 2007, Article #10688.
3. Link to AAEP Infectious Disease Guidelines for *S. equi* http://www.aaep.org/pdfs/control_guidelines/Streptococcus%20equi%20var.pdf