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Equine Strangles: Management and Prevention[1]

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Strangles is a disease caused by bacterial infection with *Streptococcus equi subspecies equi* (also referred to as *S. equi*). Strangles is one of the most commonly diagnosed contagious diseases in horses worldwide, and was first reported in 1251. The bacteria typically infect the upper airway and lymphoid tissues of the head and neck, causing enlarged lymph nodes, nasal drainage, and abscess formation. Strangles is highly contagious in horse populations and can cause outbreaks when an infected horse is introduced into a new group or herd. Horses can also become chronic persistent carriers, and serve as sources of bacteria over long periods of time. These asymptomatic carriers show little or no signs of illness, and can be responsible for recurring outbreaks on farms. This article reviews the clinical signs, diagnosis, and management of strangles in horses.

Clinical Signs of Strangles

The name strangles originated from infected horses that occasionally suffocated from enlarged, infected lymph nodes obstructing their upper airway or trachea. The hallmark clinical signs of *S. equi* infection are fever (temperature >101.5°F), mucopurulent (thick and opaque) nasal discharge, and enlarged submandibular lymph nodes (can be palpated in the space between the lower jaw bones). These enlarged lymph nodes eventually become abscesses. 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 drain out through the nasal passages. Pus accumulation (empyema) within the guttural pouches leads to nasal discharge on the affected side. Some infected horses will also have a reduced appetite, depression, and difficulty swallowing. In severe cases, infection can cause inability to chew and swallow properly, leading to signs of choke (feed and water flowing from the nostrils).

Complications of Disease

Fortunately, although strangles is highly contagious and can affect many horses on a farm, most horses with infection recover without complication. Studies report complications to occur in approximately 20% of strangles cases. Although relatively uncommon, the occurrence of complications will increase the likelihood of death from the infection (from 8% to 40% of cases). Complications from 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 vascular disease (purpura hemorrhagica, a condition characterized by severe inflammation and damage to blood vessels), immune mediated muscle disease (only occurs in Quarter Horses) and rarely, kidney disease. Horses that develop complicated infection typically require antibiotic and intensive supportive therapies based on veterinary examination.

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Diagnosis

Clinical signs alone are often enough to make a diagnosis of strangles. 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 chain reaction (PCR), is very sensitive test that detects bacterial DNA. PCR cannot tell the difference between live and dead bacteria, and is typically used in conjunction with culture.

Asymptomatic Carriers

Asymptomatic carrier horses harbor *S. equi* bacteria within their guttural pouches, but may have little or no clinical signs themselves. These horses intermittently shed infective bacteria, creating recurring strangles infections on their respective properties. Some horses may continue to shed the bacteria for months to even years, functioning as a continual source of new infections on the farm. Farms with recurring cases of strangles should be investigated for an asymptomatic carrier by endoscopic examination of all horses on the property. Endoscopic examination of the guttural pouches of a carrier horse often reveals concretions of *S. equi* pus called chondroids. Once the carrier horse is identified, your veterinarian may prescribe a treatment plan that includes chondroid removal and guttural pouch flushing.

Treatment

Most horses with strangles will resolve with only supportive care with anti-inflammatories and pain relievers. In these horses, antibiotics may actually prolong the duration of disease and are therefore contraindicated. Strangles cases with complications, or those requiring tracheostomy for management of respiratory distress, generally do require antibiotic and other more intensive supportive therapies. Antibiotics may also be used during a strangles outbreak, when early identification of horses with fever and subsequent antibiotic treatment can actually prevent them from ever developing clinical strangles.

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 Florida, and the state veterinarian will assist with the isolation and quarantine process to prevent further spread outside of the property. Movement of any horses on or off the farm should be stopped, and new horses should not be introduced. All horses on the property should have their temperatures taken and recorded 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

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.

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.

Additional Resources

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