Everything you ever wanted to know about Strangles
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Strangles is the common name for a bacterial infection affecting horses. The disease is caused by the bacteria *Streptococcus equi* ssp *equi* (*S. equi).* The organism has been around for hundreds of years and is found throughout the entire United States as well as Europe. Because the bacterium is highly contagious, large outbreaks periodically occur. Strangles cases can have a fair amount of social stigma surrounding them and controversy remains surrounding treatment and prevention of the disease. The purpose of this article is to try to clarify the signs and symptoms of strangles, treatment options, and what to do when an outbreak occurs and methods of prevention.

Where the organism lives

S. equi is an intracellular bacterium. This means that the bacteria like to live and multiply within cells. It particularly likes cells associated with lymph nodes. Lymph nodes are important elements of the immune system and are found throughout the body. They are composed of a type of white blood cell called lymphocytes. Vessels connect lymph nodes and allow cells to pass from one node to another. *S. equi* lives within lymphocytes and will often set up an infection in the lymph nodes around the head and throat. It can survive for long periods of time out of the body and horses can become infected with the bacteria months after an infection had been noted an a specific property. The bacteria is transmitted by inhalation of dust and respiratory secretions that contain the organism.

Symptoms of Strangles

S. equi primarily affects the upper respiratory tract. The first signs of a strangles infection are a fever, (can go as high as 104^0F), inappetance and general malaise. As the infection follows its course, nasal discharge is noted from nostrils and lymph nodes under the jaw and in the throatlatch region swell and form abscesses. The fever persists until the abscesses form and drain. The name strangles came about because affected horses sometimes are suffocated by enlarged lymph nodes that obstruct the airway. Severity of the disease varies a great deal with the immune status and age of the horse. Younger horses tend to develop severe lymph node abscessation/enlargements that subsequently rupture and drain. Older horses tend to show a milder form of the disease characterized by nasal discharge, small abscesses and rapid resolution of the infection.

Infection that sets up in the throat region causes inability to eat and the horses often stand with their heads extended. Attempts to swallow food and water may be followed by these substances coming out of their nostrils. When the abscesses finally open (or a lanced by your veterinarian to expedite healing), they drain pus which contains *S. equi* bacteria.

Shedding Bacteria

Nasal shedding of *S. equi* usually begins 2 to 3 days after the fever and persists for 2-3 weeks in most horses. Some horses never shed the bacteria, and others may shed persistently for much longer, even years, due to infection persisting in the guttural pouches.

Immunity

About 75% of infected horses develop an enduring immunity to the disease. Some horses will redevelop the disease several months after the original onset, most likely due to a failure of the immune system to produce significant antibodies. Older horses with residual immunity have limited susceptibility and develop a mild form of strangles known as “catarrhal strangles”. These horses shed *S. equi* that will produce severe disease in more susceptible (mostly younger) horses.

Transmission

Transmission of the disease occurs when direct or indirect transfer of bacteria occurs via nasal discharge or lymph node drainage of infected horses to susceptible horses. Horses with either type of discharge are an important source of new infections in horses. Direct transmission refers to when horses have nose-to-nose contact. Indirect transmission occurs via contaminated stalls, water sources, feed utensils, and tack as well as clothing and equipment of handlers, farriers and veterinarians.

Transmission may occur from outwardly healthy horses and then the source of infection is difficult to detect. Nasal secretions are assumed to be the source of *S. equi* in these animals. A horse just recovering from strangles may have prolonged shedding of *S. equi.* These horses are known as long-term sub-clinical carriers of *S. equi*, and can be the source of infection for naïve horses. Subclinical carriers tend to carry the bacteria in their guttural pouches. Out of the horses that have retropharyngeal lymph node abscesses which drain into their guttural pouches, 10% of the affected horses end up as carriers. These horses have chronic pus in their guttural pouches. Others form chondroids which are essentially solidified pus accumulations, which also harbor *S. equi.* If the chondroids or pus is not removed from the guttural pouches, these horses can shed for years.

Diagnosis

Diagnosis of strangles is by culture of nasal swabs, nasal washes or from pus aspirated from abscesses. PCR can also be performed to detect the presence of *S. equi.* PCR is useful in detecting asymptomatic carriers, as well as to determine elimination of *S. equi* from the guttural pouches.

Treatment

Treatment of strangles depends upon the stage of the disease and is multifactoral. The main treatment for horses is supportive care. Fevers are controlled by anti-inflammatory drugs. Enlarged lymph nodes are hot packed daily to expedite maturation and drainage of abscesses. Penicillin (antibiotic) is used in some horses depending upon where the horse is in the course of the disease. Treatment with penicillin in horses that have enlarged lymph nodes will decrease clinical signs of the disease, but once the penicillin is stopped the disease is maintained until the lymph nodes go on to abscess and drain. Usually penicillin is reserved for horses that have a fever but show **no** signs of lymph nodes enlargement or in complicated cases where the life of the horses is threatened.

Complications

Complications with strangles can occur, but the mortality rate of strangles is less than 10% particularly when veterinary care is sought. Spread of *S. equi* to other parts of the body such as the brain, abdomen, kidney or spinal cord is known as bastard strangles. This can cause problems for months post initial infection and can be difficult if not impossible to cure. Purpura hemorrhagica is another complication of strangles, which is an immune mediated disease. This causes swelling of the limbs, muzzle, hemorrhage in the gums and sclera and may cause laminitis. This complication in particular can have a guarded prognosis and these horses need to be treated by a veterinarian.

Vaccination

Currently two types of *S. equi* vaccines exist in the USA. One is a bacterial cell wall extract vaccine. This vaccine is given intramuscularly or subcutaneously. Initially horses need two doses 2-3 weeks apart and then yearly boosters. Horses that have had strangles within the year

or horses that are showing signs of the disease should not be vaccinated. It takes 2 weeks for immunity to build post vaccination with the IM vaccine.

The second vaccine is a live *S. equi* bacterium given intranasally. The vaccine is essentially a weakened form of the bacterium that causes very mild disease (usually no clinical signs), and thus stimulates immunity. It is given initially in 2 doses 2-3 weeks apart and then boostered annually. It is recommended to not use this vaccine in an outbreak situation unless given to a horse that has no known contact with exposed or infected horses.

It should be noted that both of the vaccines can also cause the complications listed above as well as abscesses in the neck or rump where the vaccine was given.

Prevention and Isolation

The best management for an outbreak situation is to segregate horses showing clinical signs of the disease and to monitor the temperature of healthy horses on the facility for 3 weeks past when the last horse stops showing signs and symptoms. Affected horses should be tested after they stop showing clinical signs to make sure they are not shedding the bacteria. This should be done before isolation procedures have been terminated.

To prevent exposure of horses to strangles, minimize exposure to other horses particularly at farms or shows that have a changing population. While at shows, horses should not have nose to nose contact with other horses or share stalls, water buckets, feed tubs, tools, tack or trailers.

In stables or herd situations, simple preventive measures can be enforced. Horses that are new on the facility should be isolated for 3 weeks prior to coming in contact with the herd. These horses should also be up to date on all their vaccinations and if desired new horses can be tested for *S. equi* before coming onto the farm. Between vaccinations, preventative measures and isolation procedures as well as working with your veterinarian are all ways to prevent strangles from occurring on your farm.