

TIMELY TOPICS TO HELP KEEP HORSES HEALTHY



Pigeon Fever 2012: an emerging disease in Kansas

**Courtney Boysen, DVM
Equine Internal Medicine Resident**

Many equine veterinarians in Kansas are seeing an increasing number of cases of Pigeon Fever, an infectious disease caused by *Corynebacterium pseudotuberculosis*, a bacteria found in the soil. The bacteria survives best in drought conditions, particularly following a mild winter such as we experienced last year. Cases are most commonly seen in the late summer to fall months following mild winter conditions. It is thought that the bacteria enters the skin through fly bites, abrasions or a laceration where it then spreads via lymphatics to local lymph nodes. The most common presentation is a large firm swelling (abscess formation) with or without lameness), with cases of internal abscess formation, and ulcerative lymphangitis seen less frequently.

The disease is not new to Kansas; however, its increased incidence this year is most likely due to an unusually hot summer with lack of rainfall and a population of horses that don't have immunity to the organism. The disease is a commonplace in states such as California and Texas. The incidence of disease can vary from year to year on a single property, but once a case is observed, the property is considered to be at risk for years as the bacteria survives in the soil.

Corynebacterium pseudotuberculosis infection occurs worldwide as a caseous lymphadenitis in small ruminants and granulomatous or visceral infection in cattle. Strains appear to be species specific, as such, cross transmission from small ruminants to horses does not appear to occur and transmission between cattle and horses is possible but not confirmed.

The bacteria enters through the skin via biting insects (most often flies), mucous membranes, or abrasions, although the exact cause of transmission is unknown. Direct transmission from horse to horse does not appear to occur as consistently as with strangles, and horses kept in stalls appear to be at a decreased risk of disease.

Corynebacterium pseudotuberculosis produces a variety of toxins, which act by causing damage to the inner lining of blood vessels which results in fluid leaving the vessel and entering the surrounding tissue (edema). This edema is observed along with external abscesses (see photo below). Most horses will present with external abscesses involving lymph nodes, most commonly affecting lymph nodes near the pectoral region. However, any lymph node can be affected. Infection of the lymph nodes will lead to significant swelling of the soft tissues in the pectoral region and the forelimb. Some horses may have lameness associated with the abscess and the accompanying edema. Others may present for suspected trauma, as initial symptoms may go unobserved and the ruptured abscess is the first sign noticed.



Photo with permission: S. Bain

Example of a horse demonstrating pectoral swelling associated with Pigeon Fever infection

Diagnosis of pigeon fever is often made based on the location of an abscess/swelling and the presence of the characteristic thick green/tan discharge. A culture of the discharge will yield nitrate positive *Corynebacterium pseudotuberculosis*. Typical progression of the external abscess will involve soft tissue inflammation and swelling surrounding the lymph node. As the abscess begins to form a firm area will be palpated around the swelling. As the abscess matures, the firm area will lose hair and the skin will rupture allowing the abscess to drain. A significant amount of discomfort is associated with the swelling and abscess formation; therefore, many veterinarians are asked to intervene and lance the abscess prior to full maturation.

Lancing and draining the abscess is often the only treatment needed for external abscesses associated with Pigeon Fever. Many abscesses are deep to muscles and may require the use of an ultrasound to guide lancing of the abscess. Daily flushing of the wound with water or a dilute iodine solution for 3-5 days will help clear the infection more quickly. Care should be taken to not contaminate the ground during lancing and flushing of the abscess. Fly control must also be initiated to prevent further infection of the horse and to prevent spread to other horses on the property. Phenylbutazone (Bute) or other non-steroidal anti-inflammatories can be given for pain and inflammation control. It is important that horse owners consult with their local veterinarian regarding proper use of medications in such cases because dehydration or other complicating factors may exist, making these medications higher-risk for adverse events. It is not uncommon for horses to spike fevers (up to 104.0) shortly before full maturation of the abscess or after lancing of the abscess. If you suspect your horse may be suffering from *C. pseudotuberculosis* infection it is important that you work with your veterinarian to determine the optimal therapeutic plan based on stage of disease and overall clinical signs. Each case is different and they need to be managed individually. For example, some horses have a more chronic form of infection resulting in persistence of active drainage beyond two weeks or repeated occurrence of infection which in such a case may indicate a need for antibiotic therapy.

Internal infection and abscess formation is a serious form of this infection that can occur in some cases. Since this complication can be quite serious, horses that have had evidence of infection and progress to having a history of weight loss may need to be tested for this form of disease. Many cases of internal infection will be identified in horses that have had a previous history of external abscess or reside on premises where external abscesses have been diagnosed in other horses. The organism appears to have a tendency to cause involvement of the spleen, liver, and kidney; however, reports of pneumonia, pericarditis (infection of the heart), meningitis, otitis (infection of the ear), and osteitis (bone infection) also exist. Similar to complications of strangles infection and the development of "bastard strangles", abscesses of

lymph nodes within the abdomen may also occur. Internal infection has also been associated with abortions when pregnant mares become infected with the *C. pseudotuberculosis*.

Diagnosis of an internal infection with *Corynebacterium pseudotuberculosis* is best determined by use of a blood test (synergistic hemolysis inhibition). Titers greater than or equal to 1:512 combined with appropriate clinical signs, leukocytosis (increased white blood cell count) and hyperfibrinogenemia (increased fibrinogen) are considered diagnostic for the presence of internal abscesses. Elevation in hepatic enzymes can also be seen when there is liver involvement. Ultrasound examination of the abdominal and thoracic cavities will be useful for making a diagnosis and monitoring of response to therapy. Improvement can be observed with ultrasound and is combined with improvement in blood cell counts and biochemistry values and can therefore be useful in determining when to stop treatment. Use of radiography in cases of bone involvement is a useful in the diagnosis and monitoring response to therapy.

When internal infections of *Corynebacterium pseudotuberculosis* are diagnosed they require long term antimicrobial therapy. The organism is susceptible to most antibiotics; therefore, antibiotic selection is based on site of infection and ability to penetrate the abscess. Working with a veterinarian is important to determine with optimal antimicrobial therapeutic protocol. Antibiotic administration often lasts for a month; however, treatment may be needed for 2-4 months.

In some instances the infection can be quite severe and some horses do not survive infection. Although in some reports the percentage of internal infections have been estimated to be ~10 of the cases. Without antimicrobial therapy in such cases survival is unlikely whereas with antibiotic the success rate climbs to 60-70%! Therefore, when internal abscesses are present early diagnosis and appropriate treatment with antimicrobials is needed, sometimes necessitating hospitalization.

Another form of infection with this bacteria is termed ulcerative lymphangitis which is an infection of the limbs, sometimes involving only one limb, hind limbs are more commonly affected than forelimbs with this form of disease. Clinical signs often include significant swelling of the leg(s) with multiple areas of drainage along the lymphatic tracts. This condition can also be seen with horses that have external abscesses. Fortunately, this form of the disease is seen in less than 1% of all cases.

In conclusion, pigeon fever is a newly emerging disease in Kansas and we will most likely continue to see evidence of the disease throughout the remainder of 2012. Conditions associated with the disease include painful swellings that can be seen anywhere, however, most commonly they will be seen on the chest or abdomen.

The swelling may be associated with lameness. Internal infection is associated with weight loss and may be slowly progressive and therefore difficult to diagnosis in the early stages. Fly control and sanitation are key factors that aid with controlling outbreaks on farms.