

by HEATHER SMITH THOMAS

Pigeon fever is a condition in horses that is also called *Corynebacterium pseudotuberculosis* abscesses, pigeon breast, dryland distemper or Colorado strangles. It is due to bacterial infection with *Corynebacterium pseudotuberculosis* and occurs most commonly along the west coast—horses in California and surrounding states are most likely to develop this condition. The term dryland distemper came into use because this infection seems most common in arid parts of the western United States, particularly the Southwest. The disease



the early stages, show swelling, lameness, pain in the area of the abscess, edema along the abdomen, reluctance

not appear externally—they remain inside the body (usually in the abdominal cavity) and can be felt by rectal palpation, often located in and around the kidney.

The portal of entry for this bacteria is still unknown, but because of the seasonal occurrence of this problem, there is some thought that the disease may be transmitted by insect vectors. The disease can occur at any time of year, but is most common in fall and early winter. The bacteria may also enter the body through small cuts or abrasions when the animal is lying down or rolling.

Pigeon Fever in Horses

is rarely found farther east than Nevada.

The main characteristic of this infection is chronic abscesses in the breast region (making the horse's breast look like that of a puffed-out pigeon—hence the name pigeon fever), but in some individuals the abscesses extend as far back as the mammary gland and sometimes appear on the sheath. Occasionally swellings appear in the armpits, along the underline of the belly or in the legs. The abscesses develop deep in the tissues and may grow as large as four to eight inches in diameter (with edema in the surrounding area) before rupturing a few weeks later. In most cases, the abscesses are merely an inconvenience (taking time and effort to clear up) but in a few cases, internal abscesses develop and these can be life-threatening.

Horses with this problem may, in



to move, midline dermatitis (irritation of the skin along the center of the belly's underline), fever, or depression, though there are often few symptoms. Later, the enlarging abscess or abscesses rupture. Sometimes the abscesses do

lymph system, going forward toward nodes in the chest or back along the belly toward the groin. Thus, the abscesses (and edema in the surrounding tissue that develops with the

Abscesses

The most common condition involves the gradual development of deep (and often thick-walled) abscesses in the pectoral area (see left), making the horse's breast swell up. More rarely, the abscesses develop internally and can cause death of the horse.

C. pseudotuberculosis can survive in soil and dust for many years. It is thought that biting insects (especially flies that create raw areas on the horse's belly) provide entrance for the bacteria. Once the bacteria enter the horse, they invade the lymph vessels under the skin of the belly and travel along the

Continued on next page

HORSE CARE Continued

enlarging abscess) most commonly occur in the breast, along the belly or in the groin area, but can also occur anywhere in the body where there are lymph glands.

At first, the developing abscesses are very hard and may be painful. The horse may have a fever. Fever and depression may make the horse go off feed and lose weight. Some horses become stiff or lame on the leg closest to the abscess.

Some horses, however, have a surprisingly low level of discomfort, unless the affected site interferes with joint movement or puts pressure on an area that causes pain. In the latter instances, the horse may show so much pain that the problem may be mistaken for something else.

Diagnosis

A veterinarian can usually diagnose this infection from clinical signs when he/she examines the horse—looking at the horse's appearance, the abscess formation, fever, etc. He/she may also culture the bacteria taken from a sample of the abscess pus.

If the swelling has not yet come to a head, the veterinarian can determine whether or not it is actually an abscess by inserting a long needle (sometimes as long as six inches in order to reach deep enough) and aspirating (sucking out into a syringe) some of the contents for examination. A tentative diagnosis can be made immediately if the material drawn from the swelling is creamy pus. The material can also be cultured to see if this particular bacteria is involved. A blood sample can be evaluated to check for presence of antibodies that would show the horse has been exposed to this bacteria.

For a number of years, veterinarians used a blood test to measure *C. pseudotuberculosis* titers in the blood. In 1996, researchers at the University of California at Davis did a study to see how accurate this test actually was. They examined the case histories of 538 horses believed to have pigeon fever, finding out that the test failed to

identify 60 percent of the infections involving external abscesses (in the breast, belly, groin, etc.) but did identify all of the less common cases with internal abscesses.

Their recommendation to veterinarians, for accurate diagnosis, was to consider a number of things besides the blood test—whether the horse lives in or has recently visited an area where pigeon fever has occurred, season of year (most cases occur in fall or early winter), the horse's history of internal abscesses, and the presence of other signs such as weight loss, fever, colic, increase in white cell count, high activity of liver enzymes and abnormal abdominal tap results. Elevated white count (white blood cells are responsible for fighting acute bacterial infections and are the main constituents of pus) and elevated plasma fibrinogen (a fibrous protein essential for blood clotting) occur during infection and inflammation—lab tests for these can also be a clue. Anemia can also occur if a horse has had chronic infection for a long time.

Treatment

At the first sign of swelling, fever or stiffness, most veterinarians recommend treating the horse with nonsteroidal antiinflammatory drugs such as Butazolidin or Banamine to help reduce the swelling, pain and fever. It usually takes the abscess at least two to four weeks to mature and come to a head, but this may take much longer. The primary goal of treatment is to establish drainage and get rid of the infection. Maturation of the abscess can be hastened with hot water, hot packing or poultices to bring it to a head faster. The abscess can then be drained, once it has developed a soft spot that can be lanced. It can be difficult to drain, however, if it is deep in the muscle and has a thick wall.

The affected horse, especially one with a draining abscess, should be kept in an isolated area, away from other horses—preferably an area that can be easily cleaned and disinfected, since the drainage from the abscess contains the bacteria. Household bleach or common disinfectants can

be used to clean the stall afterward. Infected bedding should be collected (preferably bagged) and disposed of.

If the abscess breaks on its own, it should be flushed out. If the veterinarian lances it, he/she will open it at its lowest portion, so that it can drain better, and will then rinse out the pus with a mild antiseptic solution. All of the material drained and rinsed from the abscess should be collected and destroyed so that it will not contaminate the ground or attract flies. Harsh disinfectants like iodine should not be used (unless well diluted) because they irritate the healthy tissues and delay healing. A mild antiseptic is better—one that will kill the bacteria but not "burn" the surrounding tissues.

Once opened, the abscess should be flushed out daily (and a good fly repellent applied to the area) until it heals. This may take about three weeks, but can take longer if there are several abscesses maturing or if complications develop.

A few horses develop internal abscesses or recurring abscesses. In these cases, the veterinarian may recommend the use of systemic antibiotics. If the horse has had abscesses before, or has had stress that may have weakened the immune system, he may be more prone to the development of internal abscesses.

Use of antibiotics for treating a horse with pigeon fever has some risks and should always be given under the supervision of a veterinarian. An appropriate antibiotic (one effective against this particular bacteria) must be given at sufficient levels for one to six months, depending on the individual situation. If the antibiotic levels are too low, or not given long enough, this may allow a localized infection to spread throughout the lymph system to other parts of the body.

Treatment with antibiotics may backfire, if not given long enough. If some of the bacteria survive treatment, they can spread to other parts of the body to cause more abscesses. Systemic antibiotics do not readily penetrate abscesses, and are therefore often ineffective or even counterproductive

in treating most forms of pigeon fever and strangles—where there are visible external abscesses. The best treatment for these cases is surgical drainage.

Complications

Uncommon complications of pigeon fever include abscess formation in the lymph nodes near the kidneys or throat (the latter are similar to lymph node enlargements in strangles). Throat abscesses may inhibit the airways and cause difficult breathing. Abscesses near the kidneys may cause abdominal pain. Any internal abscesses may become fatal.

The infection may create a high fever which, in turn, can cause laminitis. If a mare is pregnant the infection may kill the fetus, thus causing the mare to abort. High fever in a stallion may cause him to have a period of infertility later. If a mare's udder is affected, she may develop mastitis.

Occasionally, the bacteria may enter the lymph system of the legs rather than through the belly. This causes chains of abscesses and round ulcers to appear over the lymph channels. The

horse may have fever, and show lameness and varying degrees of lethargy and loss of appetite. This form of the disease can become chronic and may result in continuing lameness and debility. The horse may lose so much skin on the legs and the regeneration process is so lengthy the owner chooses to have the horse put down.

Prevention

Infection with *C. pseudotuberculosis* can be difficult to prevent, since this bacteria can live for long periods in the soil, in stalls, and on tack and other horse equipment. Horses do not always gain protective immunity from exposure. In some horses, the bacteria may continue to live in the horse's body cells for many years. The best way to protect your horses is to treat wounds promptly with disinfectant as well as practice diligent fly control. The University of California at Davis Equine Research Laboratory has been doing research on pigeon fever, and work has been done during the past 10 years to look into the

possibility of a vaccine, but so far no effective vaccine has been developed.

It is a difficult disease to work with because incidence is low, sporadic and geographically limited. One researcher estimated that pigeon fever is 1,000 times less contagious than strangles. It also cannot be reliably reproduced under laboratory conditions, making it difficult to perform controlled tests to develop a vaccine.

The researchers feel that the incubation period between the time that the bacteria enter the horse and an abscess appears, can be anywhere from two months to a year. Incidence of the disease seems to vary over four year cycles. Like ulcerative lymphangitis (which closely resembles the hind leg version of pigeon fever) one avenue of infection seems to be direct exposure of an open wound to contaminated soil. The large chest abscesses seem to be caused by fly-borne infection, but the actual culprit (type of fly) is still unknown. There are a number of questions that still need to be answered.

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