APRIL
1999
Volume 7
Number 3

Equine Disease Quarterly

FUNDED BY UNDERWRITERS AT LLOYD'S, LONDON, BROKERS AND THEIR KENTUCKY AGENTS

IN THIS ISSUE

University of Kentucky
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LLOYD'S

Commentary

Herd health practices and preventive medicine have made many advances in the last thirty years. Abortions and the production of weak unthrifty foals from placentitis have not decreased and are one of the major problems facing the equine breeding industry today.

In most instances placentitis is an individual mare problem, not a herd problem. Farms often have only one or two cases a year, often caused by different organisms and spread over the breeding season. These abortions often occur during the middle of the season and are soon forgotten in the hectic days of foaling and breeding. Mares that abort from placentitis rarely remain infected and are ready to breed back soon after they abort, with a normal foal the following year.

Equine placentitis can be divided into three types based on their anatomical location. Cervical placentitis is caused by infection entering at the cervical star (where the placenta comes in contact with the cervix) and spreading anteriorly, distorting the placental connection with the uterus. This reduces its ability to maintain the nourishment of the fetus and in some instances infecting the fetus by entering the placental circulation. Diffuse placentitis has lesions randomly scattered over the placenta caused by a blood-borne organism such as *leptospira*. The third occurs at the base of the horns of the placenta. The source of infection is unknown, but it is postulated that infection may gain entry through the cervix when the mare is in heat. This last type of placentitis has increased in the central Kentucky area in recent years, produced by a *Nocardia*-like organism.

These *Nocardia*-like organisms have not been fully classified but are gram positive, spore forming, branching rods. They are not very invasive and cause little reaction in the placenta or the uterus. The fetus or foal is not infected and the uterus clears itself of the organism without antibiotic treatment. Once established the organism continues to multiply, causing the placenta to become separated from the uterus and in so doing robs the fetus of nutrition. The condition of the fetus depends on how early delivery occurs and how much placenta has been damaged. Many foals if not aborted are delivered a month prematurely, are small and weaker than normal.

Mares showing clinical signs of *Nocardia* placentitis usually have premature mammary development and little else. Because the infection starts at the base of a uterine horn, it rarely involves the cervix area consequently, there is no cervical discharge. Ultrasound examination of the mare and fetus can be used to assess the severity of infection. It usually starts on the ventral placental surface so exudate and placental separation can be visualized with transabdominal ultrasonography. Transrectally the area around the cervix looks relatively normal. When the placenta is delivered after foaling, there is an area of thick tenacious mucus usually brown in color and covering a large area of the placenta.

Nocardia-like placentitis appears to be increasing with no established method of control or treatment. Investigations are underway at the Livestock Disease Diagnostic Center and the Maxwell H. Gluck Equine Research Center in Lexington, Kentucky to better understand this condition and eliminate its occurrence. ■

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International

Fourth Quarter 1998

The International Collating Center, Newmarket provided the following information.

Cases of coital exanthema (EHV-3) were reported among mares and a stallion on a Thoroughbred stud farm in South Africa. Individual cases of abortion attributable to EHV-1 were reported from Ireland and the United Kingdom. Respiratory disease caused by EHV-4 was diagnosed in Ireland, Netherlands, United Kingdom and among weanlings that passed through the November sales in Kentucky.

Serological evidence of EVA infection was reported among 32 stallions in Sardinia, Italy although there was no association with clinical disease. Nine of 96 warmblood horses were identified as seropositive for EVA in Kwazulu-Natal, South Africa on a single farm. No clinical disease has been reported. The source of infection has been traced to imported frozen semen over the last five years. A ban on the use of frozen and chilled semen has been imposed by the veterinary authorities. Equine influenza was reported in Denmark, France, Sweden and the United Kingdom. Clinical cases of piroplasmosis attributable to *Babesia caballi* and *equi* were confirmed in Switzerland.

Strangles was widely reported from Ireland, Japan, Norway, Switzerland and in the United Kingdom among animals that passed through the December sales in Newmarket. A major outbreak involving several hundred Thoroughbred yearlings and mares on a single farm in Western Province, South Africa was diagnosed during October.

West Nile Virus Encephalopathy was confirmed among horses for the first time in Tuscany, Italy during September involving several premises with some mortality. ■

National

Equine Tapeworms

Unwelcome and unannounced they come, developing silently within the intestines of the horse. Within the cecum, the parasites usually surround the ileocecal valve. Having no mouth parts or digestive tract, they absorb nutrients through their cuticle. The equine tapeworm can grow to about 3 inches long by 1/2 inch wide. Its head, called a scolex, has four suckers that attach to the mucosa or lining of the intestine; below each sucker is a tiny flap called a lappet. Recent surveys in horses at necropsy in Central Kentucky revealed a prevalence rate of nearly 60%.

Tapeworms are a member of the group of parasites called flatworms, which also includes flukes. The tapeworms are referred to as cestodes. There are three species in the United States, *Anoplocephala perfoliata*, *Anoplocephala magna*, and *Paranoplocephala mamillana*. Of the three, only *A. perfoliata* presents a problem to horse owners in Kentucky because the prevalence rate of *A. magna* is very low and *P. mamillana* is not found in Kentucky horses, although it is present in other geographical areas.

Tapeworm segments (proglottids) contain both male and female organs. Proglottids progress through development from immature, mature, adult, and gravid. This last segment contains fertile eggs, sloughs off and passes in the manure, as shown in ***Figure 1***. An intermediate host, an oribatid or free-living mite found on pastures, eats the tapeworm eggs which undergo a period of development of two to four months inside the mite before reaching the infective or cysticercoid stage. For a horse to become infected with a tapeworm, it must, as it grazes, ingest mites containing the immature or cysticercoid stage of the parasite. The chances of a horse becoming infected are high because there are millions of oribatid mites in pasture.

Aside from the usual clinical signs of parasitism (*e.g.*, unthriftiness, rough haircoat, lethargy, loss of appetite, diarrhea), it is very difficult to diagnose tapeworm infection. This is because the parasites do not lay eggs that can be readily detected by examining a fecal sample. Eggs present in the feces are the result of a ruptured proglottid.

Tapeworms are usually viewed as benign when compared with some of the other parasites. How-

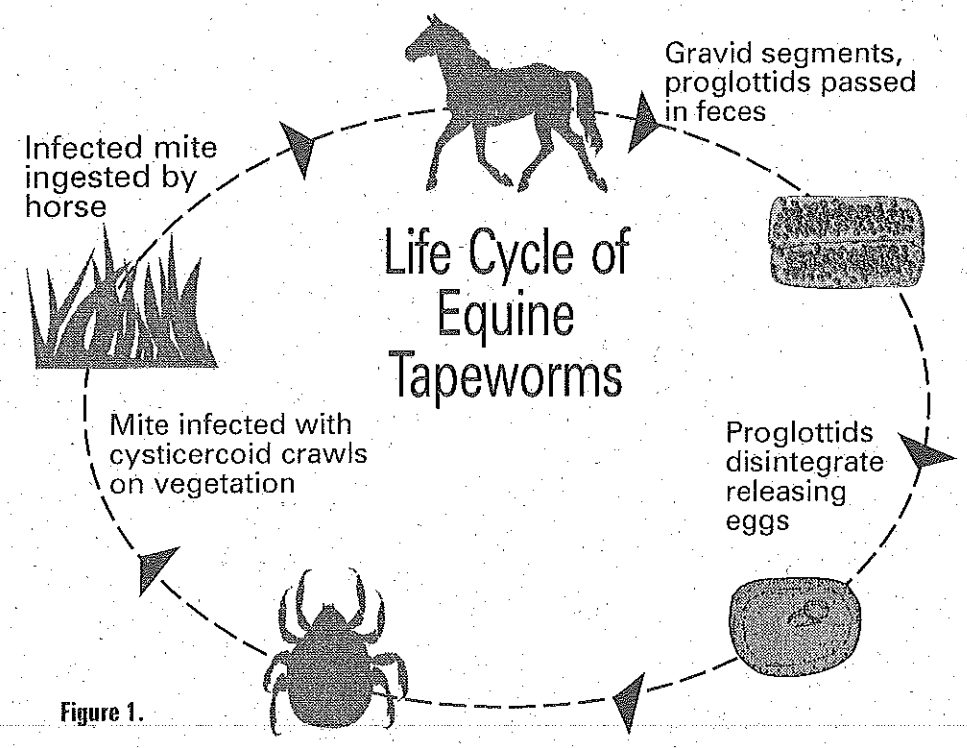

Figure 1.

ever, heavy infections can result in cecal hemorrhaging, blockage, ulcers, perforation, and have been suspected of causing hypermotility within the intestine, leading to ileocecal intussusception.

Farm managers, owners, and veterinarians who worm exclusively with the avermectin-types (ivermectin and moxidectin) are not addressing the tapeworm problem. These dewormers have no activity against tapeworms. Pyrantel has been proven to be active against equine tapeworms, but unfortunately, there is no compound currently on the market labeled as such. Until a commercial product can be developed for the removal of cestodes, concerned individuals should discuss appropriate methods of treatment with their veterinarians.

The Parasitology Section at the Gluck Equine Research Center is continuing to monitor the prevalence of tapeworms in Kentucky horses and has an ongoing program of drug-testing to find a cestocide that is efficacious and economical. ■

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Alfalfa Cubes: An Alternative Forage

Good quality forage is the basis of feeding programs for all horses. When hay is being fed, horse owners need to select a hay that is nutritious but also free of dust and mold. However, when mold-free hay is not available, horse owners can consider the use of alfalfa cubes as a viable forage alternative. The difference between alfalfa hay and the alfalfa cube is the size of the package. With the alfalfa cube, the forage is coarsely chopped and then mechanically compressed into a 1.25 by 2-inch cube. Therefore, when horse owners use alfalfa cubes in a diet for horses, the cubes replace hay of a similar quality on an equal basis.

The process of cubing the alfalfa does not affect the availability of nutrients to the horse. Research reports indicate that the availability of the energy and protein is the same in cubed as alfalfa hay.

It is important, however, for horse owners to control the feed intake of their horses when using alfalfa cubes as the forage source. Research conducted in Alberta, Canada noted that the voluntary feed intake of mature horses was 20% greater with

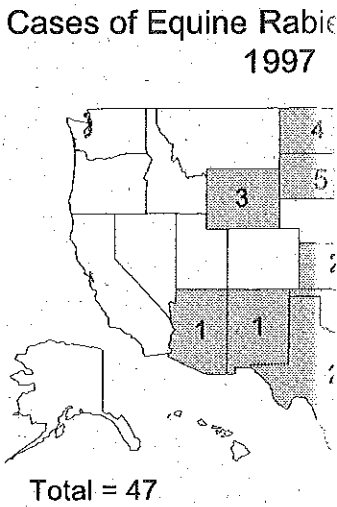

Figure 2.

alfalfa cubes than with alfalfa hay. Horse owners that do not control the consumption of a high quality hay cube will have overweight horses or an increased incidence of digestive upsets.

Because the forage is chopped prior to cubing, a common concern with horse owners is that their horses will eat faster and possibly develop bad habits such as wood chewing on a cube-based diet. Research at Colorado State University would suggest that other factors such as boredom and weather are responsible for horses developing the habit of wood chewing, not the use of cubed alfalfa as the forage.

Advantages of alfalfa cubes are reduced feed wastage, consistent nutrient quality, ease of handling, and allowing horse owners to regulate feed intake and reduce potential exposure to dust and mold. This latter advantage is important for horses with respiratory problems.

Disadvantages are that the cubes must be fed in a controlled manner to prevent overconsumption and there may be an additional cost due to processing.

When all the advantages are considered, alfalfa cubes can provide horse owners with a high quality, nutritious, and convenient product that is a viable alternative to hay in feeding programs for their horses. ■

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Equine Rabies, 1997

Rabid animals were reported from every state except Hawaii in 1997, according to the Centers for Disease Control and Prevention (CDC), Atlanta, GA. Rabies was confirmed in 47 horses, donkeys and mules in 21 states and Puerto Rico ***(Figure 2)*** in comparison to 46 equid cases in 1996. These figures represent only laboratory-confirmed cases since not every neurological horse which dies is submitted for necropsy and rabies testing.

A variety of clinical signs occur in rabid horses, such as behavior changes ranging from aggression to depression, ataxia, paresis, hyperesthesia (hypersensitivity to stimuli), fever, colic, lameness and recumbency. With such a variety of clinical presentations, diagnosis in the live animal is difficult. The disease usually progresses to death in four to five days, although survival to 15 days is possible. Rabies is 100% fatal in horses and most other domestic species. Diagnosis is made on laboratory testing of tissues taken at necropsy.

There are several reservoirs of the rabies virus in the United States: raccoon, skunk, fox, bat and coyote. Wild animals were the source of 7,899 (93%) of all rabies cases in 1997, with raccoons being the most frequently detected (4,300), followed by skunks (2,040), bats (958) and foxes (448). Most of the rabid raccoons were found in 19 states along the eastern seaboard, east of the Ohio River in the North and east of the Appalachian Mountains in the South, where there is currently an epizootic of raccoon rabies.

In general horses are assumed to be infected with the predominant variant of rabies found in their home area, raccoons in the east; skunks in the central United States. However, in 1994 one Kentucky horse was confirmed to have been infected with bat rabies. Specialized testing of brain tissue to determine the source of rabies is routinely done in humans, but is not commonly performed on animals.

Rabid bats were found in 46 of the 48 contiguous states and pose a threat to horses, other mammals and people. Four cases of human rabies in 1997 were the result of rabid bat exposure and 19 of 21 human cases of rabies in the United States from 1990-1997 were due to the bat rabies variant. The CDC currently recommends rabies prophylaxis for people who awaken to find a bat in the room, or for unattended children, mentally disabled or incapacitated people found in rooms with bats.

Although bats are nature's form of insect control, building and maintaining bat houses around homes and animal housing is discouraged. Rabies vaccines are licensed for use in horses, cattle, sheep, domestic cats, dogs and ferrets. Equine vaccination should start at three months of age and annually thereafter. ■

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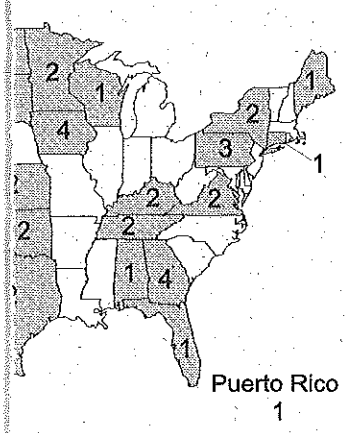

Kentucky

Equine Sarcoid

Sarcoid is a tumor of the skin of horses, donkeys and mules, presumably caused by bovine papilloma virus infection, characterized by proliferation of neoplastic fibroblasts and thickening and/or ulceration of the skin. It is the most frequently diagnosed tumor in horses. Surveys have estimated the prevalence of sarcoid at 20% of all equine neoplasms and 36% of all skin tumors.

Sarcoids occur at any age but are more common in young adult horses. These tumors may be single or multiple and, although they occur most frequently on the head, limbs and abdomen, they can occur anywhere on the body including sites of trauma and healed wounds. Even though all breeds are affected, a genetic predisposition to sarcoid development may exist. Quarter horses, Appaloosas and Arabians may be at greater risk and Standardbreds at lower risk to develop sarcoids. There is no gender, coat color, seasonal or geographic predilection for the occurrence of sarcoids.

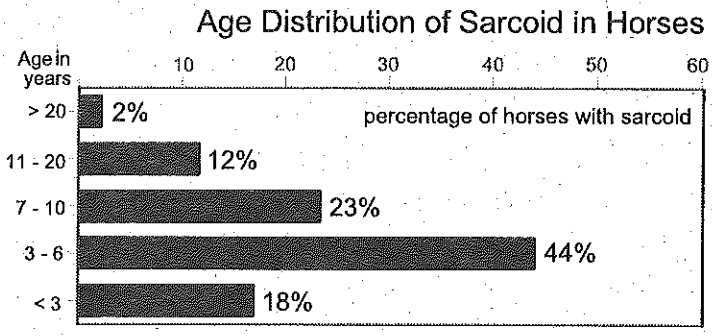

Figure 3.

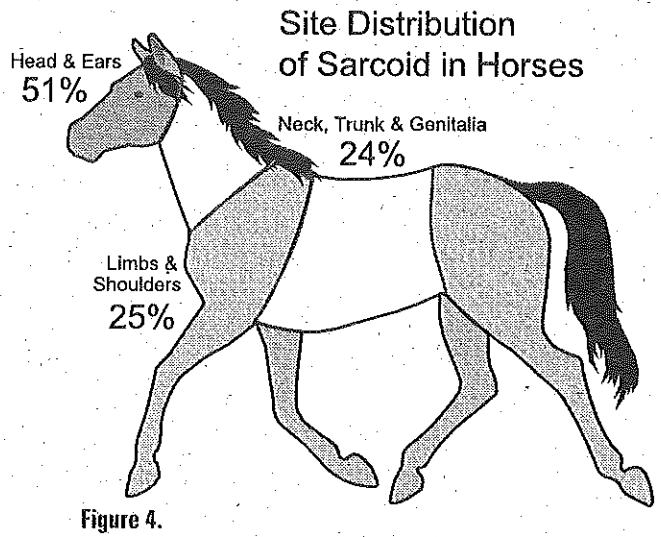

Figure 4.

The appearance of sarcoids varies from small, sessile or pedunculated growths that have a warty appearance to firm, freely moveable, nodular dermal masses. Sarcoid diagnosis is based on the characteristic microscopic arrangement of fibroblasts and collagen fibers and their orientation to the overlying epidermis. There are many approved methods for treating sarcoids, some of which include surgical excision, cryotherapy, immunotherapy, radiotherapy, laser therapy, hyperthermia, topical chemotherapy and intratumoral chemotherapy. Treatments may have to be repeated. Sarcoids are locally invasive and frequently recur after surgical excision, but do not metastasize.

During the period between January 1993 and December 1998, 465 cases of sarcoids were diagnosed at the University of Kentucky Livestock Disease Diagnostic Center. Breed information was supplied in 93% of the cases. Twenty different horse breeds, ponies, mules,donkeys and crossbred horses were represented. Twenty-four percent of the tumors occurred in Thoroughbreds. Some of the other breeds affected, in decreasing order of frequency, were Quarter horses (22%), Tennessee Walking Horses (8%), American Saddlebred Horses (7%), Arabians (6%) and mixed-bred horses (6%). It appears that Quarter horses and Arabians which represented 5% and 2% of the accessions during the reporting period, respectively, are at greater risk to develop sarcoids than are Thoroughbreds, which accounted for 66% of equine accessions.

Horses in the Central Kentucky area with sarcoid ranged in age from 122 days to 26 years. Forty-four percent of the sarcoids occurred in animals between three and six years of age and 85% in animals ten years of age or less ***(Figure 3)***. Four cases occurred in animals less than one year of age. There was no gender or seasonal predilection for the occurrence of sarcoid.

The anatomical distribution of sarcoids in this survey was similar to that reported in other surveys. Lesions were most frequent on the head and ears (51%), followed by the limbs and shoulders (25%), and the neck and trunk including the male and female genitalia (24%) ***(Figure 4)***. Of sarcoids on the head, the eyelids and ears were the most frequently affected sites. ■

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EIA Surveillance, 1998

During 1998 a total of 88,149 samples were tested for equine infectious anemia (EIA) in Kentucky. Private testing accounted for 73,590 samples that were submitted to comply with state regulations regarding the sale and exhibition of equines in Kentucky, resulting in three animals identified as EIA positive.

In addition, 14,559 samples were collected through the Market Surveillance Program or for epidemiological testing. Six animals were identified as positive.

During 1998 the number of EIA tests performed rose 35% compared with 1990, although the number of positive tests has dropped fourfold. ■

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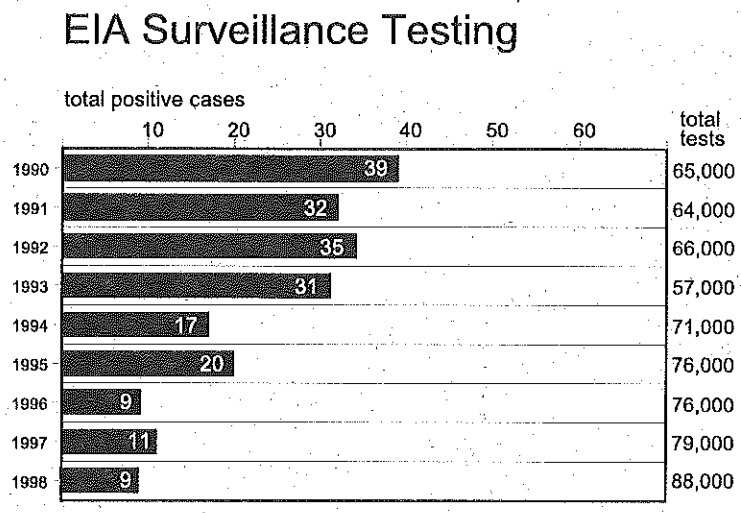

Figure 5.

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