

FINDING OUT ABOUT STRANGLES

Spring to horse breeders means foals, breeding, and—strangles. This infectious disease can sweep through a farm, affecting newborn foals, weanlings, yearlings, and older horses. While rarely fatal, it leaves a trail of ugly scars and sick animals. Strangles is often seen on large breeding farms where a great number of mares and foals are kept or are passing through for breeding.

Until recently little epidemiologic information on strangles was available. This has changed. A research team from the School of Veterinary Medicine, University of Pennsylvania, began a study of strangles in March 1983. The project was funded by a grant from the Standardbred Owners and Breeders Association, and by a grant from an anonymous horse breeder in New Jersey.

"Strangles is a highly infectious disease of the upper respiratory tract of horses," explained Dr. Corinne R. Sweeney, one of the investigators from the department of clinical studies at New Bolton Center. "The sick animal has a runny nose with a thick mucous nasal discharge. Often it has a fever and refuses to eat. The lymph glands in the throat and jaw area swell which can interfere with breathing and swallowing, hence the name 'strangles.'" The disease is caused by *Streptococcus equi*, an organism normally not found in healthy horses. As strangles runs its course the lymph glands develop abscesses which eventually break open and drain externally. Although in most horses the clinical signs of the illness last three to four weeks, durations of as few as five days and as long as ten weeks were also observed during the course of the study.

The usual treatment for strangles is to rest the horse and keep it quiet without stress. Strangles can be treated with antibiotics; penicillin is very effective against *Streptococcus equi*, but is not usually recommended. In most cases the disease runs its course and the horse recovers fully without antibiotics.

However, some horses develop complications known as bastard strangles. Here the *Strep. equi* enter the bloodstream and cause abscesses and infections in other parts of the body. These horses can have pneumonia, pleuritis, guttural pouch infection, and sometimes a complete obstruction of the respiratory tract occurs. The researchers also found that some mares with severe strangles fail to produce milk for their foals. One very serious complication of strangles is purpura hemorrhagica in which the animal develops a hypersensitivity reaction to *Strep. equi*. Its legs swell and on occasion an excessive amount of skin can be lost from the



lower limbs. This can be so severe that the horse has to be humanely destroyed.

Strangles and the complications arising from it cause a great deal of expense for the horse breeder. Extra manpower is required to care for the sick animals since a lengthy period of time and additional space have to be provided to isolate the sick horses.

"When we began the study, little epidemiological data were available," said Dr. Sweeney. "It had been thought that once a horse recovered from strangles that it could be put back with the other animals. We have found otherwise."

The field study was designed to determine how long affected horses remain carriers and whether horses which show no sign of the disease can be asymptomatic carriers. Researchers also wanted to know the duration of the disease as well as the spread on a given farm. They wanted to document the number of complications and the mortality due to the disease.

Horses with strangles were identified and examined at four farms. The team took cultures from nasal swabs, throat swabs and lymph nodes, and serum samples were drawn every week. In addition to the animals on the farms, mares and foals returning from other breeding farms where they were exposed to strangles were cultured weekly. The tests were designed to identify asymptomatic carriers and to identify horses which might be incubating the disease.

The New Bolton Center team studied 589 horses of which 245 had been exposed to the disease. Of these, 94 showed signs of strangles. Six horses died from complications. The team found that horses, contrary to belief, could be infectious for up to four weeks after they had recovered from strangles. "We strongly recommend that all horses that have strangles be kept in isolation for four weeks after they have reco-

vered, or until three weekly cultures are negative," Dr. Sweeney stated. "Horses that return from breeding farms where they may have had strangles should be kept in isolation for four weeks or until three cultures are negative."

The researchers did find that cultures are not the absolute test. "We could grow the organism in only about 60 percent of the cases, even though the animals exhibited all the signs of the disease," Dr. Sweeney said. "The preferred sites for taking culture samples are the lymph nodes. We were less successful in isolating the *Strep. equi* from swabs taken from the nasal passages or the throat area." It was found that none of the animals treated with antibiotics had a positive culture.

The team found that the asymptomatic carrier state is virtually nonexistent. The mares and foals returning from farms where they were exposed to strangles were cultured repeatedly. "We could not isolate *Strep. equi* from these animals," Dr. Sweeney said. "There has been a report of one horse in Colorado which appeared to be an asymptomatic carrier. *Strep. equi* could be isolated from his nasal passages, though he was not ill. He was an oddity and we think that the spread of the disease via asymptomatic carriers is extremely rare."

Strangles is spread through contact with the mucous nasal discharge. "Horses are social creatures, they congregate in the pastures, they nuzzle one another and they graze in the same area," she said. "It is hard to keep them apart, so the organism is spread from horse to horse through direct contact. At a future date the New Bolton Center team hopes to study various disinfectants to determine which is the most effective. Right now the recommendation is to avoid overcrowding for horses and to isolate any horses which show signs of the disease.

The study also found that foals from dams with strangles could be protected from the disease if they were given antibiotics prior to showing any evidence of strangles. It was found that once this preventive measure was discontinued, the incidence of strangles among these foals was lower than among foals which had not received the drug.

The study is not completed yet. The researchers have developed an ELISA test and they will study the serum collected to determine the antibody titers of the affected horses. It is known that such titers develop when a horse has strangles but it is not known whether this protection is passed along passively to the foals. This is one question which will be investigated.

The team also plans vaccine trials with subsequent ELISA testing to determine the degree of immunity a horse can obtain from vaccination. Another aspect of the study is to determine how long *Strep. equi* can survive in the environment and under what conditions. This will be helpful because horse breeders may be able to prevent the spread of the disease by eliminating conditions favorable to the organism.

Hopefully these further studies will point the way toward prevention and elimination of strangles, easing the burden for the horse breeder.

The investigators from the department of clinical studies at New Bolton Center are Corinne R. Sweeney, D.V.M., Robert H. Whitlock, D.V.M., Ph.D., and Charles E. Benson, Ph.D. They are helped by research technicians Mary Bannister, Suzanne Whitehead, and Stephen Barningham. Additionally, Dr. David Miers, an equine practitioner from New Jersey helped coordinate the field study. *Helma Weeks*