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Root Canal Therapy for Fracture-Induced Endodontic Disease in the Dog

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Equine Epistaxis Research

Murli Manohar, B.V.Sc., Ph.D., of the University of Illinois College of Veterinary Medicine, estimates that as many as 70 to 80 percent of Thoroughbred racehorses are "bleeders." After exercise—often even a mild warmup (breezing)—blood flows from their nostrils or can be seen in the bronchial tubes with special scopes.

"When 80 percent of animals have a condition, usually you would consider it to be normal and wonder what was wrong with the other 20 per cent that they didn't have it," Dr. Manohar said.

Dr. Manohar is studying bleeders at the University of Illinois through a grant from Morris Animal Foundation, Englewood, Colorado. The non-profit Foundation funds studies of the health problems of horses, dogs, cats and zoo animals.

However, bleeding definitely appears to affect the performance of racehorses, Dr. Manohar said. Breeders and owners, therefore, are anxious to find a cure, prevention or treatment.

No one knows exactly where the blood originates in the lungs, or why horses have this condition.

The problem is not confined to Thoroughbreds. Quarter horses, Standardbreds and ponies are among the other horses known to be bleeders.

Furosemide, a diuretic drug, often is used to treat bleeders. Many trainers believe that it reduces the blood pressure and therefore helps prevent bleeding.

Dr. Manohar is testing what actually happens to blood pressure in the lungs of the exercising horse, and whether furosemide changes this pressure.

Using electrodes to measure blood pressure and the pressure required to expand and contract the horse's lungs, Dr. Manohar is working ponies on treadmills at trot and gallop. The information from his first phase of testing has given surprising results.

Current theories about bleeding are that horses have small areas of obstruction in their lungs where the tissue is less flexible. Maximum stress such as racing, it is believed, stretches the lungs and causes tears in these inflexible areas.

Dr. Manohar's tests have shown that when ponies go from resting to a fast trot, the right heart pressure increases as does the pulmonary artery pressure. At the gallop, these pressures increase still more. These very dramatic increases are not seen during exercise in other species such as dogs, pigs, and man. They may have a slight rise, but not as dramatic an increase as in ponies.

At the same time pressure is increasing inside the blood vessels the force required for the animal to expand its lungs is pulling the vessel outward still more. This stress may be causing blood vessels to tear.

"In bleeders the amount of blood put into the lungs with each beat of the heart at the gallop may exceed the total capacity of the lungs," Dr. Manohar said.

When the drug furosemide is administered, there is a small reduction in pulmonary artery pressure, but Dr. Manohar feels it is so tiny that it is probably insignificant. The drug is not reducing blood pressure enough to prevent bleeding. Nor did it effect the effort required to breathe.

These results are too preliminary to actually define the origin of the problem, Dr. Manohar said. Next he will measure blood flow in the arteries of the lungs. These branch quickly into smaller and smaller vessels. Dr. Manohar wants to learn if the shear force at these branch points is significant in conjunction with the other forces in the lungs.

Future studies will examine the lung's other source of blood, the bronchial blood supply. The pulmonary blood supply now being studied is the functional supply which picks up oxygen in the lungs and conducts it to the other tissues. The bronchial blood vessels supply nutrition to the lung tissue. Bleeding may be from this source.

"The owner wants to know if a racehorse's time can be improved. This relates to factors which affect maximum performance, and we don't know what those factors are.

"I thought I would start with the heart and see if flow to the organ could be increased with vasodilators infused during exercise. We learned we could increase it, so that's proba-

bly not the limiting factor. Now we are looking at the blood flow to the lungs," Dr. Manohar said.

Equine Colic Research

Clyde, the pony, died of severe colic last year. On the advice of veterinarians at the University of California School of Veterinary Medicine, Davis, Mr. and Mrs. Dale Brooks, Clayton, California, had their long-time friend put down.

Clyde taught the Brooks' six-year-old daughter Sarah, to ride, and was an important part of the horse-loving Brooks family. Mrs. Brooks vowed that the death of the 17-year-old Russian pony wouldn't be in vain.

She participated in the 1985 Danville Junior Horsemen Ride for Research, a fund-raising project of Morris Animal Foundation, Englewood, Colorado. Riders obtain pledges for miles ridden. The money is used for horse health studies in veterinary colleges.

Mrs. Brooks raised \$1,550 in donations, which she contributed to the study of colic at the University of California, Davis, in Clyde's memory. Morris Animal Foundation funded a study of new surgical techniques for colic at the college, supported in part by the money dedicated to Clyde.

Twists and displacements of the horse's colon can be repaired surgically with great success, thanks to advances in equine colic surgery.

Ten years ago, such colics were usually fatal. But now that their success rate in such surgeries produces long-term survivors, equine surgeons realize that a small number of these survivors have a recurrence of the same condition.

Dogs and cows also are prone to torsions. Recurrence in these animals is so common that at the time of initial surgery, the surgeon attaches the twisted organ to other organs or to the abdominal wall, deliberately creating adhesions which prevent further twisting.

Dennis Meagher, D.V.M., Ph.D., and Mark Markel, D.V.M., University of California, Davis, equine surgeons, are testing the same technique on horses through a grant from Morris Animal Foundation, Englewood, Colorado. The non-profit organization funds studies of the diseases and health problems of dogs, cats, horses and zoo animals.

The surgeons are testing a technique which can be performed easily by equine practitioners. It will add approximately half an hour to the colic surgery.

The technique has been performed on a number of horses. So far, all show good recovery. A post-surgical weight loss is quickly regained and the horses show no apparent ill effects from immobilization of the fastened colon.

Initially the procedure will be recommended by Drs. Markel and Meagher only for horses needing a second surgery for twisted colons. The recurrence rate is too low for the special technique to be applied routinely unless long-term follow-up of treated horses confirms that there are no side effects.

