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VIRGINIA-MARYLAND
REGIONAL COLLEGE
OF
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Kent C. Roberts, DVM
Extension Veterinarian

March 26, 1984

CHLORAMPHENICOL ALERT

Dear Doctor:

The purpose of this letter is to alert you to an initiative by the Food and Drug Administration designed to eliminate the use of chloramphenicol in food-producing animals. Because this use appears to be widespread and because the unique toxicity of this product to humans has now been so well-established, the Food and Drug Administration must move to effectively eliminate usage of chloramphenicol in food animals.

Of particular interest are the following emergent concerns:

- (1) Two cases of human deaths following contact with veterinary chloramphenicol;
- (2) Reports of chloramphenicol-induced aplastic anemia in humans which later terminated in leukemia;
- (3) The finding that the incidence of aplastic anemia is not related to chloramphenicol dose (although prolonged therapy increases risk);
- (4) Reports of aplastic anemia from the minute doses associated with human ophthalmic therapy;
- (5) Estimates that one in approximately 30,000 people are susceptible to fatal aplastic anemia following exposure to chloramphenicol.

The veterinary drug label warnings range from "Not for use in animals which are raised for food production" for the 1% ophthalmic ointment to "Chloramphenicol products must not be used in meat-, egg-, or milk-producing animals" for the oral and parenteral forms. All dosage forms are restricted to use by or on the order of a licensed veterinarian.

A comprehensive enforcement program by federal and state authorities will continue until diversion of chloramphenicol to food animal use ceases. Your assistance in that effort will be appreciated. Please help in disseminating this information to the livestock agriculture community. I wish to thank you in advance for your cooperation in this all-important endeavor.

Sincerely yours,

Lester M. Crawford, DVM
Director, Bureau of
Veterinary Medicine

FELINE DIROFILARIASIS

Heartworm disease in cats has been reported sporadically in the past. Recently, however many practitioners have begun reporting more cases of feline dirofilariasis. Most of the study of feline heartworm disease has been done at Auburn University. Although hard data is unavailable as to the exact incidence of this disease in the cat. Most clinicians feel that the incidence approaches 18% where canine heartworm disease is endemic. This is probably not an unreasonable figure since 78% of exposed cats can be infected when exposed under experimental conditions designed to simulate the natural environment. When cats die from heartworm disease or when heartworms are found as an incidental finding at necropsy, most clinicians mentioned 1-3 adults. However, a few clinicians have reported finding 8 or more adults in affected cats.

The clinical signs of feline heartworm disease are quite different from those of the disease which occurs in dogs. 40% of infected cats are asymptomatic and heartworms are found only at necropsy. 54% of infected animals have chronic clinical signs of gastrointestinal disease, with vomition as the major complaint. Some of these animals may also have chronic respiratory signs. Only 6% of cats with heartworm disease present as emergencies. In these animals the complaint is the acute onset of respiratory distress.

Clinical pathology is of relatively little value in diagnosing feline heartworm disease. More than 80% of infected animals are amicrofilaremic. Some patients may have a marked eosinophilia. Several companies are developing occult heartworm tests for cats, but as yet, none are available.

Radiography may be one of the most important tools for diagnosing heartworms in cats. Dillon at Auburn University reports that in experimentally infected cats with 1-3 adults, the caudal lobar pulmonary arteries can be easily visualized. They appear to be outlined by interstitial densities caused by an inflammatory response to the adults. In the severely affected individuals which present with acute respiratory distress, a generalized interstitial pattern of lung disease may be seen.

The presence of adults in the pulmonary arteries does not appear to cause pulmonary hypertension in the cat. This may be due to the fact that medial hypertrophy of the vessels occurs instead of proliferation of the intima of the arteries.

Traditional caparsolate therapy in the cat may result in up to a 20% patient mortality. Experimental work indicates that low-level glucocorticoid therapy may be beneficial in this disease since it is the animal's inflammatory response which is actually causing the clinical signs of disease.--James C. Keith, Jr., DVM, Ph.D., VA-MD Regional College of Veterinary Medicine.

THOUGHT FOR THE MONTH

The ultimate business of education is cultivation of the human mind and the nurture of the human heart.--Frank H. T. Rhodes, President, Cornell University

THE USE OF SEMEN EXTENDERS IN EQUINE ARTIFICIAL INSEMINATION

Mares bred naturally by a stallion will usually experience endometritis for 672 hours post breeding. This is due both to the trauma of intromission, and to the ejaculation of a quantity of semen with possible bacterial contamination into the uterus. This tends to be more of a problem in mares with a depressed uterine immune system, poor conformation (penumo vagina), or mares showing some degree of uterine pathology and/or when stallions with pathogenic bacterial contamination of the penis, urethra, or semen are used to breed naturally. The use of semen extenders may be of value in order to put antibiotics into contact with the semen. Semen extenders also may prolong equine spermatozoa survivability in the female reproductive tract and enhance the fertility of marginally fertile stallions. They have added advantages of protecting semen from possible environmental contaminants, hostile environments, and may allow an increase in total volume of fluids available for insemination (when needed).

At VPI & SU we primarily use the extender described by Dr. W. L. Cooper in Veterinary Clinics of North America. It is easily formulated from:

dry skim milk (Sanalac) 2.4 gm
glucose 4.9 gm
water (deionized, distilled) 96 ml
8.4% sodium bicarbonate 1.6 ml
gentamicin sulfite (500 mg/ml) 2.0 ml

Our pharmacy makes it up in 50-100 ml batches and freezes it for later use. We prefer to use semen to extender ratios of 1:1 to 1:3. An alternative semen extender is described by Dr. Pickett and Voss: 100 ml skim milk -- heated for 10 minutes at 90°C -- 95°C in a double boiler, cool at room temperature, and remove all scum. Add 1000 IU polymixin sulfate for each ml of extender. These may be frozen in 10 ml doses.

Semen bacterial contamination from infected stallions should be minimized to avoid possible uterine infection. To do this we collect the stallion, then wash the semen by centrifugation at 500 RPM for three minutes. A soft pellet will be produced at the bottom of the centrifugation tube. The supernatant is decanted and the pellet is resuspended with an extender. The semen may be cooled at 4°C for one hour after which insemination is performed as usual.

Artificial insemination is not allowed in certain breeds. Dr. Kenney describes a minimal contamination technique which may be employed whenever AI is not allowed due to breed restrictions and uterine contamination is a problem. The uterus is filled to overflowing with an antibiotic impregnated semen extender (usually 100-300 ml) warmed to body temperature. After the uterus is distended the mare is bred by natural cover and the stallion will ejaculate into the antibiotic containing extender. I prefer this minimal contamination extender for uterine infusion:

instant, dried, lowfat, skimmed milk (MARVEL) 2.5 gm
gelatin BP 0.5 gm
glucose 5 gm
crystallin penicillin 300 mg
crystallin streptomycin 300 mg
sterile water 100 ml

These techniques are just a few among many which may help you in your quest to impregnate the problem or chronically infected mares.--D. G. Pugh, D.V.M., M.S., VA-MD Regional College of Veterinary Medicine.

WARNING ON STEROID USE IN HORSES

Anabolic steroids--mention the drug and you have a hydra-headed argument on your hands; medical, ethical, and legal. Athletes have taken these testosterone-related steroids for several decades, convinced they enhance ability even though such a standard reference as the Physicians' Desk Reference cautions: "Warning: Anabolic steroids do not enhance athletic ability." On the other hand, the much respected medical journal The Lancet says, "Unquestionably, anabolics improve live weight gain, carcass weight, feed efficiency, and percentage meat in some species." The reference is to livestock, but the application to football players, weightlifters, etc., is clear. So clear, in fact, that the 1984 International Olympic Committee has included steroids among the approximately 100 drugs banned and prohibited for use by competitors (the committee is backing up this ruling with some of the most sophisticated ultra sensitive drug-detection equipment ever devised).

Where does that leave the equine athlete--and the horse owner--when the use of anabolic steroids is the question? Do these compounds have any place in an equine conditioning program? Have any dangerous side effects been documented? Leaving aside the legal and ethical aspects of usage, the medical problems associated with steroids among human athletes are undeniable. These range from decrease in fertility in males to visible, potentially catastrophic, and irreversible masculinization in females. Other side effects include acne, cholesterol buildup, and altered liver function. As far as the effects of the drugs in horses are concerned, some important guidelines can now be drawn as a result of a series of studies conducted by J. M. Maher, M.S.; E. L. Squires, Ph.D.; J. L. Voss, D.V.M.; and R. K. Shideler, D.V.M.; at the Animal Reproduction Laboratory, Colorado State University's College of Veterinary Medicine.

Previous work at Colorado had shown that the use of anabolic steroids with males had detrimental effects on reproductive function, including a substantial reduction in testicular size and diminished spermatozoal production. The recent experiments were designed to determine if the drugs would have a similar detrimental effect on females. The study concluded that none of the mares receiving anabolic steroids displayed normal estrous behavior. In addition, use of the steroids caused abnormal sexual behavior in all the mares; the mares showed an increase in masculine behavior such as aggressiveness and mounting. When an estrous mare was introduced, mares that had received the steroids engaged in mounting and teasing behavior. The conclusion the Colorado State group has reached is unequivocal: "Due to the detrimental effect of anabolic steroids on reproductive function, particularly behavior, their use in mares intended for reproductive use is not recommended."

Another conclusion of the same study may help to settle the question of whether steroids do in fact result in faster growth and better developed musculature. Says the report: "Anabolic steroid treatment had no effect on body weight. Height at withers was also unaffected by anabolic steroid treatment." The research team notes that the findings on this point concur with a number of other reports that steroid use does not result in increase in growth or weight gain, nor do the drugs have any beneficial effect on muscle development.--taken from the Animal Health Newsletter, Cornell University, College of Veterinary Medicine, Vol. 2, No. 1, 1984. Equine Professional Topics Vol. 10 #1, 1984 University of Illinois.

POTOMAC FEVER UPDATE

The Virginia Acute Equine Diarrhea Syndrome (AEDS/Potomac Fever) Committee met in Warrenton on May 29. Virginia practitioners are reminded of the following points as we enter the Potomac Fever season:

Potomac Fever is a reportable disease in Virginia. Suspicious or suspected cases should be reported to the Virginia Department of Agriculture regional laboratory at Warrenton (703) 347-3131. Dr. Jerry Wilson is the regional veterinary supervisor.

Clinical signs that constitute the criteria for a suspected case are anorexia, fever, leucopenia and gastrointestinal abnormalities.

The Warrenton Regional Laboratory is prepared to assist by performing CBC, salmonella isolation and necropsy.

Following the report of a suspicious case the reporting veterinarian will be contacted for follow up information. No quarantine on the affected premises will be issued.

A seminar on Potomac Fever, held at the Madeira School on April 20, attracted an audience of almost 600 interested and concerned participants. Speakers representing the institutional research being done on the disease discussed the few things that are known and the many things that are not known about the disease.

The symptoms have been reproduced by the transfer of whole blood from affected to unaffected horses. Evidence that a rickettsial organism may be involved has been presented when horses with clinical signs of the disease all developed antibodies to a rickettsial agent. Researchers are suspicious that a causative organism is spread by a biting insect or tick because of the seasonal nature of the disease. It appears to be infective but not contagious. Direct horse-to-horse spread has not seemed to occur.

Speakers recommended two precautions for horse owners: institute an insect control program and watch horses carefully for the early signs of illness (anorexia, lethargy, fever).--K.C. Roberts D.V.M., VA-MD Regional College of Veterinary Medicine.

SUCCESS IS NO ACCIDENT

Many practices have a recall or reminder system to notify clients of annual vaccinations, heartworm checks, etc. The majority of clients appreciate this service and respond to the mailed or telephoned reminders by making an appointment.

Two questions you might want to ask yourself concerning this important service are: 1) How effective is your recall system and can you document its effectiveness? 2) Do your staff members believe in your recall system and understand the medical reasons for it?

Time spent answering these questions might prove worthwhile. After all, taking good care of your regular clients may be easier than finding new ones.--K.C. Roberts D.V.M., VA-MD Regional College of Veterinary Medicine.

USING IVERMECTIN

Ivermectin (Merck and Co., Inc., Rahway, New Jersey) has proved to be effective whether given orally or parenterally to several animal species and in several formulations. The compound has shown a high degree of efficacy against a wide range of endo- and ecto-parasites of significant economic importance.

Several formulations of ivermectin were evaluated in the overall development program. An injectable aqueous micelle formulation (EQVALAN*) is presently being marketed for horses in several countries including the United States. The final formulation chosen for swine is a solution in organic solvents and differs from EQVALAN but is similar to that presently marketed for cattle (IVOMEK*) in many countries and has as its primary advantage, a persistent drug level sufficient to control mite infestation throughout the egg-to-adult life cycle.

A series of 78 trials was conducted in several geographical locations under various conditions in which a total of 1,510 pigs, including sows, gilts, barrows, boars and piglets, were treated with ivermectin in doses ranging from 20 mcg/kg to 30 mg/kg to determine its efficacy and safety as a broad-spectrum antiparasitic agent.

Efficacy dose-titration and confirmation data obtained from these trials show that ivermectin administered by subcutaneous injection in the neck at a dose level of 300 mcg/kg was 94.7 to 100% effective against natural and induced infections of adult and immature Ascaris suum, Hyostrongylus rubidus, Oesophagostomum spp. and adult Strongyloides ransomi and Metastrongylus spp. Ivermectin was 100% effective against Sarcoptes scabiei var. suis and Hematopinus suis within 14 days after treatment. No serious adverse reactions that could be attributed to treatment were observed in any of the pigs in these trials.

Additional trials were conducted to show that ivermectin was safe for use in breeding swine, to establish a margin of safety for the product and to identify the toxic syndrome.

A New Animal Drug Application has been filed with the U.S. Food and Drug Administration for Ivermectin Injection for Swine.

A significant amount of EQVALAN has been administered to other animal species for treatment of a variety of parasitic conditions. In swine, the major use of EQVALAN has been for control of sarcoptic mange. Problems may arise with EQVALAN use in pigs since sufficient data is not available to determine efficacy and safety of this formulation. Disappointing efficacy results may be due to a number of factors including more rapid drug clearance, dilution of product to accommodate treatment of pigs, dose conversion and management practices. Ivermectin does not exert an immediate effect on ectoparasites and a "knock-off" effect seen with topicals does not occur. Mites may remain infective for several days after treatment. The relatively high safety margin observed with the swine injection formulation may be reduced with a micelle that exhibits a different absorption pattern and plasma profile.-- taken from a presentation by Dr. E. S. Broken at the 1983 Minnesota Swine Herd Health Programming Conference. Swine Professional Topics, Univ. of Illinois, Vol 10 #1, 1984.

MEETINGS

September 7-8, 1984	Clinical Electrocardiography Clinical Cardiology Part I Blacksburg, VA
September 27-28, 1984	Nutrition for the Dairy Cow Frederick, MD
October 12, 1984	Equine Practitioners Seminar Equine Medical Center - Leesburg, VA
November 16-17, 1984	Urogenital Surgery (Small Animal) Blacksburg, VA
November 30-December 1, 1984	Clinical Cardiology Part II Blacksburg, VA

FIRST CLASS GRADUATES

On June 9, 1984 62 senior students became the first graduates to receive degrees as Doctors of Veterinary Medicine from the Virginia-Maryland Regional College of Veterinary Medicine in ceremonies at Virginia Tech, Blacksburg, VA.

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

Dr. C. T. Larsen - Extension Specialist - Avians
Dr. K. C. Roberts - Extension Specialist - Equine and Companion Animals
Dr. T. P. Siburt - Extension Specialist - Pharmacology and Toxicology
Dr. H. F. Troutt - Extension Specialist - Cattle and Swine

Mollie M. Heterick, Managing Editor of VIRGINIA VETERINARY NOTES

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