

no. 13
2
T
ED



THE FOOD ANIMAL VETERINARIAN

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE
VPI & SU LIBRARY

Spring 1994

No. 13

MAY 10 1995

Dear Food Animal Practitioner,

BLACKSBURG, VA

You should have received the copy of the program for the Virginia Academy of Food Animal Practice annual meeting and educational program. It is scheduled for April 30, 1994 at the Ever's Family Restaurant in Mt. Crawford, VA (just south of Harrisonburg). The meeting should be exceptional with the following speakers:

Dr. Paul Johnson, Dairy Herd Health Practitioner, Enterprise, Alabama.

Dr. Elaine Hunt, Associate Professor, Internal Medicine, Dept. of Food Animal Medicine, College of Veterinary Medicine, North Carolina State University, Raleigh, North Carolina.

Dr. Tom Bailey, Assistant Professor, Production Management Medicine, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, Virginia.

Dr. Johnson will speak on Minimal Intervention Dairy Reproductive Programs, Tips to Minimize Heat Stress, Programs to Enhance Conception Rates in Dairy Cows, and Getting Herd Health Programs Implemented--Targeting the Employee.

Dr. Hunt will speak on the etiology, treatment and prevention of neonatal diarrhea in calves.

Dr. Bailey will speak about dairy heifer health programs.

We hope you are making plans to be there. Please plan on coming and bringing a colleague.

Three new faculty members have recently joined the Production Management Medicine group at the Virginia-Maryland Regional College of Veterinary Medicine:

Dr. Tom Bailey- Dr. Bailey previously practiced in Bedford and Forest, Virginia. He has done a residency in theriogenology at Auburn and was on the faculty at Mississippi State before coming to Tech. His special interests are dairy heifer management, theriogenology and dairy records analysis.

Dr. Jerry Roberson- Dr. Roberson completed a residency at Washington State University and, before that, an internship at Iowa State. His interests are epidemiology and bovine mastitis.

Dr. Lorin Warnick- Dr. Warnick completed an internship, residency and PhD program in epidemiology at Cornell. He has an interest in epidemiology, statistics and computer use in veterinary medicine. His PhD project involved study of disease in dairy calves.

We're sure these new folks will add to our ability to provide service to all of you.

The Virginia Board of Examiners continues to conduct inspections of all practices in the state. Some food animal practices, because their set-up is so different from other practices, are struggling to meet the requirements. These requirements seem to be enforced a little more strictly than before. A discussion of the issue will be part of the Academy meeting at 7 am on April 30.

Sincerely,

Dee Whittier, DVM
Extension Veterinarian, Cattle

FOOD FOR THOUGHT

Recent data suggest that chronic feeding of fat may lead to accumulation of fat in the liver. One report indicated that diet adipose triglyceride hydrolysis may be increased during fat supplementation which could result in long-term accumulation of fat in the liver¹. Fatty liver can develop when serum nonesterified fatty acids (NEFAs) from the breakdown of tissue fat, rise in concentration and the liver uptake of NEFAs exceed the liver's ability to synthesize and secrete lipoproteins. A long-term fat feeding trial is currently being conducted in Illinois which may give us some answers about its effects on the health of dairy cows.

The modern dairy cow walks a fine line metabolically². If she goes off feed for some reason (spoiled feed, heat stress, etc.) she mobilizes body fat, some of which is stored in the liver. For example, dry matter intake falls precipitously for 10 to 14 days before calving to about the first week after calving. An increase in liver fat concentration during this peripartum period is common among dairy cows. When severe, it is associated with clinical problems, including morbidity from ketosis, mortality, and reduced breeding efficiency.

To combat some of these problems associated with fat deposition in the liver, researchers in Wisconsin have been experimenting with drenching high risk (e.g. obese) cows with propylene glycol (8 to 12 oz twice daily) 7 to 10 days before calving and for about one week after calving³. Giving this precursor orally helps to minimize body fat mobilization at this critical time. They have seen a reduced incidence of ketosis among the treated cows.

In addition to providing for the high risk cows, a proper dry cow ration and a transition ration are necessary to see those new fresh cows successfully through their next lactation. Monitoring body condition on cows and adjusting intakes in late lactation is another way of preventing cows from going into the dry period too heavy and ending up with metabolic disease. --Dale Moore, DVM, MPVM, Extension Veterinarian, Penn State University.

References

1. Grummer RR, Carrol DJ. Effects of dietary fat on metabolic disorders and reproductive performance of dairy cattle. J An Sci 1991; 69(9):3838-3852.
2. Herdt TH. Fatty liver in dairy cows. Vet Clin North Am Food Anim Pract 1988; 4(2):269-287.
3. Grummer R. Personal communication. 1993.

--As reported in Herd Health Memo, November 1993. Penn State University, University Park, PA.

EHD OUTBREAK ON VIRGINIA/WEST VIRGINIA BORDER

Beginning in early September, an increasing number of white-tailed deer were found dead along the northern Virginia/West Virginia border with lesions typical of Epizootic Hemorrhagic Disease (EHD). Workers at the Southeastern Cooperative Wildlife Disease Study in Athens, Georgia, have isolated EHD, serotype 2, from deer samples sent to them from northern West Virginia. Eight cattle herds were affected in West Virginia.

Around September 15, owners of five cattle herds and one lamb flock in Virginia began seeing animals with ulcerative lesions of the lips and hard palate primarily with some ulcers on the tongues of the lambs only. Only one animal was affected in each of the cattle herds. Of five cattle tested serologically, all five were positive for EHD and one was also positive for Bluetongue (BT). The feeder lamb flock experienced approximately 70 percent morbidity and lost an average of four to five lambs a day for a total mortality of approximately 30 animals (18 percent). Adult sheep on the farm in direct contact with the lambs were not affected. Serological testing of seven lambs was negative for both EHD and BT, however, one lamb submitted for necropsy had histopathologic lesions of vasculitis and hemorrhage compatible with a diagnosis of an orbivirus infection, either EHD or BT. The outbreak appears to have been self-limiting with no new cases reported since October 1, 1993. --Dx Monitor, FALL 93.

PROTOZOAL ABORTIONS IN DAIRY COWS

Abortion due to Neosporum caninum, protozoan parasite related to toxoplasma, is probably becoming one of the most frequently diagnosed causes of fetal wastage in dairy cattle. First diagnosed in California and southwestern United States in the mid and late 1980s, the parasite has now been found in dairy herds throughout much of the U.S. Thus far, it has almost exclusively affected dairy cows.

Several cases have been confirmed or suspected in Kansas since last spring.

Abortions may occur in an epizootic form with multiple cases over a several week period or as a sporadic problem with occasional abortions occurring over months or years. Although an antibody response to the organism does occur, it may not be protective as there is some evidence cows may abort from this infection more than once.

A wide range of ages of fetuses may be affected but most are between four to seven months of gestation. Some calves may be carried to term and born weak or with CNS signs such as an ascending paralysis. These full term calves are often undersized.

When necropsied, calves aborted due to neospora infection tend to be autolyzed indicating they have been dead in utero for a day or more prior to being expelled. Otherwise, there are no gross lesions. The cows are generally not sick and the placenta is usually not retained.

Currently, the only definitive method of diagnosing neospora abortion is by histologic examination of formalin fixed tissues. Tissues most frequently affected are brain, heart, and skeletal muscle but lesions are often subtle and the organism difficult to definitively identify, especially in the typically autolyzed specimen. Sections of skeletal muscle are often less autolyzed and may still be diagnostic when lesions are no longer evident in brain and heart. Lesions are less consistently found in liver, kidney, lung, and adrenal gland. Many cases will be missed if brain, heart, and skeletal muscle are not submitted in formalin. Thin slices of any of the large muscles are probably adequate for examination of the skeletal muscle. Removing the brain takes a little extra time but in cases of neospora abortion is often worth the trouble.

Serologic tests are being developed. Current serologic tests may have some value as herd screening tests but are considered unreliable on an individual cow basis.

The life cycle of the organism and the pathogenesis and epidemiology of this infection are currently unknown. Therefore, recommendations regarding prevention and treatment are unavailable. Sound management and good hygiene are currently the only defense against this organism and these are often not adequate.

Considerable research efforts are being directed toward the disease and answers to many of these questions should be forthcoming in the near future.

The following is the KSU Diagnostic Laboratory's recommendations for submission of bovine abortion cases.

Submission of the entire calf plus placenta, chilled but not frozen, along with serum from the dam is ideal. If unable to submit the entire calf, then the following is suggested:

Histopathology -- Submit in 10% buffered formalin brain, lung, kidney, heart, skeletal muscle, and placenta.

Bacteriology -- Submit abomasal contents (minimum 2 cc.), lung, liver, and placenta.

Fluorescent Antibody -- Submit unfixed lung, kidney, liver.

Virus Isolation -- Submit lung, liver, kidney, and spleen.

Serology -- Submit fetal heart blood or thoracic fluid (minimum 2 cc.).

Most state diagnostic laboratories have similar protocols, but a call to the laboratory you are submitting to before sending specimens is often helpful and appreciated. --**Dr. George Kennedy, Diagnostic Laboratory, Kansas State University, as reported in Clinical Veterinary Medical Newsletter, January 1994, Kansas State University, Manhattan, KS.**

THUMB RULES FOR ADMINISTERING SUBCUTANEOUS FLUIDS TO CALVES

1. Calves greater than 8% dehydrated are not good candidates because severe dehydration causes enough peripheral vasoconstriction that the fluids are not adequately absorbed; therefore, the ideal candidate is less than or equal to 8% dehydrated.
2. The administered fluids should be warmed to body temperature or 1° or 2° above. Warmth will stimulate increased circulation to the area and enhance absorption of the fluids, as well as warm the chilled calf.
3. The fluids administered should be isotonic because hypertonic fluids will tend to withdraw fluid from the vasculature and prolong the rate of absorption.
4. No glucose should be included in the SQ fluids, as glucose provides an ideal medium for bacterial growth and complete sterility at the puncture site through the skin cannot be guaranteed.
5. The administered fluids should be sterile in order to reduce the chance of subcutaneous abscess formation.
6. The sites of administration should be clean. In a calf that is clean and dry, a simple skin prep may be satisfactory for bolus injection. When a drip is used and the needle left in place, the sites of injection should be clipped and aseptically prepared to reduce bacterial contamination.
7. The rate at which fluids may be administered is variable. They can be given by bolus or rapid flow, but we find it is best to hook up an IV administration set and allow the fluids to run at a fast drip rate. This allows more even distribution of the fluid in the subcutaneous space. The IV tubing can be secured to the calf's dorsum using tape and a suture or a band of tape around the body, so the needle is not pulled out if the calf moves.
8. The preferred sites for administration are high up on the neck or thorax, just cranial to the shoulder or caudal to the scapula. This provides four sites for administration per calf and the fluids can be equally distributed amongst these four sites.
9. We typically expect uneventful absorption of the fluid at a rate of about 15 ml/kg per injection site. In a typical 35 kg calf, this allows about 500 ml per site or a total of 2 liters per calf. This amount of subcutaneous fluid is usually absorbed within 4-6 hours.
10. The patient should be monitored for excess fluid accumulation and central gravitation of administered fluid.

Providing oral and SQ fluid concurrently will usually bring the moderately dehydrated calf back to normal hydration. Subsequent electrolyte and fluid therapy can then be administered orally to match ongoing losses. --**Excerpted from Franklyn Garry, DVM, MS, Department of Clinical Sciences, Colorado State University in The Bovine Practitioner, SEP 93, as reported in Herd Health Memo, January 1994, University of Kentucky, Lexington, KY.**

KEYS TO VETERINARIAN-CLIENT RELATIONSHIPS

Producers are inundated with information these days. Sometimes this information is highly technical -- take animal health, for example.

Veterinarians who wonder why their clients fail to adopt their advice should rethink their textbook approach to consulting, Dr. R. M. Friendship, University of Guelph associate professor, told attendees of the recent George A. Young Swine Conference in Lincoln, Neb. If a veterinarian's client's eyes glaze over during a farm visit, there may be a good reason: information overload. Maybe the veterinarian is providing too many recommendations at once. Friendship said producers tend to forget 50% of a veterinarian's advice within 5 minutes.

Although hog farmers typically need lots of advice, veterinarians would be better served by focusing on one, easily achieved goal. Friendship said this is particularly helpful when working with a new client. Accomplishing a clear objective swiftly will boost the producer's confidence in the veterinarian.

Indeed, lack of confidence in the veterinarian's skill can set the stage for a breakdown in communications, he added. He advised swine practitioners to ensure they address the right person in the operation. Sometimes, that means visiting with managers or assistant managers, as well as the producer/owner.

Another common communications problem is the tendency for veterinarians to assume that their client's only objective is to improve profitability. Other goals may be just as important, indirectly contributing to the bottom line. For instance, producers may be quite concerned with maximizing security or minimizing labor costs, Friendship said. Failure to communicate may surface when veterinarians overestimate a producer's ability or experience. This can be solved early on by taking a walk through the hog operation. Perhaps the most common contributor to communications failure is poor record-keeping. Producers without good records are difficult to work with, he said, because they don't have a clear idea of where they are or their objectives. --**Feedstuffs, Aug. 16, 1993, as reported in Herd Health Memo, October 1993, University of Kentucky, Lexington, KY.**

EFFECTS OF INTRAUTERINE OXYTETRACYCLINE AND/OR SUBCUTANEOUS FENPROSTALENE IN DAIRY COWS WITH RETAINED FETAL MEMBRANES

Postpartum dairy cows with retained fetal membranes (n = 210) were consecutively and alternately assigned to 1 of 4 treatment groups: 1) Group 1 (OT) were infused daily with 5 grams oxytetracycline (OT) in povidone; 2) group 2 (OT + PGF) were infused daily with 5 gm OT and treated with 1 mg fenprostalene at enrollment; 3) Group 3 (PGF) were treated with 1 mg fenprostalene at enrollment; 4) Group 4 (No Tx) served as untreated controls. Cows were monitored daily and all disease conditions were recorded. Reproductive performance in the subsequent breeding season was also monitored. Duration of retention of fetal membranes did not differ (P = .3842) between groups. Intrauterine infusion with OT (Groups 1 & 2) reduced (P = .0208) the incidence of fever (>103.5°F), however, the incidence of other concurrent postpartum disease was not affected. Incidence of pyometra was increased (P = .0017) in Group 2 cows (9 of 52). Uterine pathology was detected by rectal palpation at 28-42 days postpartum, in 9, 14, 8 & 9 cows from Groups 1-4, respectively. Intrauterine infusion with OT tended to increase days open in cows confirmed pregnant. Complete breeding performance data will be presented and discussed. Although intrauterine OT therapy did reduce the incidence of fever, administration of fenprostalene alone tended to improve reproductive performance. --**R.D. Stevens and R.P. Dinsmore, Department of Clinical Science, College of Veterinary Medicine and Biological Sciences, Colorado State University, Fort Collins, CO 80523. Society for Theriogenology/Newsletter, Vol. 16, No. 4 - July/August 1993, as reported in Veterinary Newsletter, January 1994, Utah State University, Logan, UT.**

VETERINARIANS MUST OBSERVE ANIMALS

In November of 1992, the Animal and Plant Health Inspection Service (APHIS) revised regulations for accrediting veterinarians on a national, rather than a state basis. This has brought procedural changes, including the "seven day rule":

"An accredited veterinarian shall not issue or sign a certificate, form, record of report which reflects the result of any inspection, test, vaccination, or treatment performed by him or her, with respect to any animal, unless he or she, within seven days prior to such signing, has personally observed each animal in a location that allows the accredited veterinarian sufficient space to observe the animal in such a manner as to detect abnormalities related to areas such as, but not limited to, locomotion, body excretion, respiration, and skin conditions. An accredited veterinarian shall examine each animal showing abnormalities, in order to determine whether or not there is clinical evidence compatible with the presence or absence of a communicable disease."

The new accrediting regulations are contained in the Federal Register, Vol. 57, No. 226, Monday, November 23, 1992, Rules and Regulations, CAR Parts 160, 161, and 162. **--AVMA Professional Liability, NOV 93, as reported in Herd Health Memo, January 1994, University of Kentucky, Lexington, KY.**

COLIFORM MASTITIS MAY AFFECT REPRODUCTIVE PERFORMANCE

Reproductive failure is a significant problem in many dairy herds. The normal estrus cycle in a cow varies from 18 to 24 days. Alterations in the estrus cycle decreases reproductive efficiency, resulting in major economic losses. Research reported at the NMC Annual Meeting indicates that coliform mastitis, caused by *Escherichia coli*, *Klebsiella sp.*, and other gram-negative bacteria, may adversely affect the reproductive mechanisms in cows.

The pathways by which coliform mastitis may influence reproduction are complex. However, it appears that gram-negative endotoxin and various cell mediators affect the endocrine events which influence the reproductive cycle in cows.

Endotoxins refer to lipopolysaccharide components of the cell wall of gram-negative bacteria. White blood cells responding to endotoxin produce numerous compounds such as interferon, prostaglandins, colony stimulating factor, tumor necrosis factor, interleukins, and others. Some of these mediators have been associated with endocrine changes in animals challenged with endotoxin.

A gram-negative intramammary infection in early lactation may result in the formation of ovarian cysts which delay the onset of a fertile estrus and conception. Furthermore, infection may cause changes in the estrus cycle or induce embryonic or fetal loss due to effects on the corpus luteum and lowered progesterone levels. **--Source: National Mastitis Council Annual Meeting Proceedings (1993) p. 162 as stated in Udder Topics, Volume 16, No. 2, April 1993, and as reported in Veterinary Newsletter, No. 289, July 1993, University of Georgia, Athens, GA.**

THOUGHT FOR THE MONTH

"I skate to where the puck is going to be, not where it is now."

--Wayne Gretzky

ABOMASAL ULCERS

Abomasal ulcers can be found in any age calf but are predominately observed in either neonates (1-3 weeks of age) or weanling age (2-6 months) calves. We diagnose this condition during necropsy with increasing frequency in range calves in the spring. Many possible etiologies have been considered: dietary changes, mucosal trauma due to coarse roughage, bezoars, stress, lactic acidosis, copper deficiency, mycotic infection (*Absidia*, *Mucor*), bacterial infections (*E. coli*, *Streptococcus*, *Staphylococcus*, *Pseudomonas*, *Salmonella*, and *Clostridium perfringens*) and viral infections (BVD and malignant catarrhal fever). Phenylbutazone has also been reported as causing abomasal ulcers.

Clinical signs are those of acute abdominal pain, colic, abdominal tympany and depression. Most range calves are found dead without the owners noticing acute antemortem signs, indicating an acute onset followed quickly by death.

On necropsy, the abomasum may contain only a solitary perforated ulcer or multiple mucosal erosions and submucosal ulcers. In the case of perforation, there is free abomasal content in the peritoneal cavity and extensive fibrin deposition on the serosa of organs.

Copper deficiency has been reported as a cause of abomasal ulcers in range calves in western Nebraska, eastern Wyoming and Montana. This may be due to a lowered immune response associated with copper deficiency, allowing various organisms to proliferate and possibly cause mucosal lesions in the abomasum. Additional copper supplementation of cows in affected herd was reported to reduce the incidence of ulcers in calves. We have tested liver copper levels of weanling calves with ulcers and found most of them within normal ranges; however, in a few cases, low liver copper levels were found and may have contributed to the etiology of ulcers.

Clostridium perfringens type A and E have been associated with the presence of abomasal ulcers, particularly in neonatal calves. Practitioners in the north central area of the U.S. report a reduced incidence of abomasal ulcers in herds vaccinated against *C. perfringens* types C and D. In our experience, *C. perfringens* found in high concentration in the abomasum in a relatively fresh carcass may indeed indicate an etiological association, especially if there is a widespread inflammation of the abomasum with dense infiltrations of neutrophils and macrophages, dilation of lymphatic vessels, edema of the submucosa, hemorrhages on the mucosa and large numbers of bacilli embedded in the submucosa. Some of the abomasal ulcer submissions to TVMDL fit this "picture" but it is by no means a consistent finding.

One of the exciting areas in human medicine is the recent discovery that a bacterium known as *helicobacter pylori* is playing a primary role in the pathogenesis of stomach ulcers. This organism is closely related to the *campylobacter* species. In recent years, *campylobacter* species have been isolated from two cases of abomasal ulcers in neonatal calves, as well as from pigs with gastric *campylobacter*-like organisms on H&E sections of abomasal ulcers.

Treatment of gastric ulcers in humans has switched to antibiotics with good success. *Helicobacter pylori*-like *campylobacter* species are sensitive to a variety of antibiotics, including erythromycin, amoxicillin, nitrofurans, and tetracyclines. Treatment with bismuth salts has also shown good results in human patients with gastric ulcers.

The etiology of abomasal ulcers in calves is multifaceted, and it remains important to investigate potential problems. Further studies are needed to determine if *campylobacter* or *helicobacter* organisms play the same important role in calves as they apparently do in people. --**Nebraska Veterinary Science Newsletter, University of Nebraska Cooperative Extension, Vol. 22, No. 11, November, 1993, as reported in Clinical Veterinary Medical Newsletter, February 1994, Kansas State University, Manhattan, KS.**

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

Dr. J.M. Bowen - Extension Specialist - Equine
Dr. C.T. Larsen - Extension Specialist - Avians
Dr. K.C. Roberts - Extension Specialist - Companion Animals
Dr. W. Dee Whittier - Extension Specialist - Cattle

K.C. Roberts and Dee Whittier, Editors

Maura M. Wood, Production Manager of Food Animal Veterinarian

**VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY
VIRGINIA COOPERATIVE EXTENSION
BLACKSBURG, VIRGINIA 24061-0512**

Nonprofit Org
U. S. Postage
PAID
Blacksburg, VA 24061
Permit #28
