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WHAT'S INSIDE!

Kent. C. Roberts, D.V.M.
Extension Veterinarian

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

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University of Maryland 1856

Buffered Aspirin, Carprofen and Etodolac in Dogs

Nonsteroidal anti-inflammatory drugs (NSAIDs) frequently are used for the treatment of osteoarthritis in veterinary medicine because of their analgesic, antipyretic, and anti-inflammatory properties. There are only four NSAIDs approved for use in dogs in the United States: phenylbutazone, meclopfenamic acid, carprofen, and etodolac. Aspirin probably is the antiinflammatory drug used most commonly in companion animals, but it is not approved for use in the dog. Severe blood loss, gastric ulceration and perforation are recognized complications of aspirin use and occur in dose-related fashion. Aspirin has been shown endoscopically to cause GI bleeding at a dosage of 25-35 mg/kg PO q8h. The main purpose of this research was to provide information regarding adverse GI effects of drugs that are commonly used in dogs suffering from osteoarthritis.

Twenty-four healthy mixed-breed dogs were divided into four groups. Group 1 received a placebo PO ql2h, group 2 received an average of 16.5 mg/kg buffered aspirin PO ql2h, group 3 received an average of 2.2 mg/kg carprofen PO ql2h, and group 4 received an average of 12.8 mg/kg etodolac PO q24h (with a placebo in the PM). All treatments continued for 28 consecutivedays. Gastroduodenal endoscopy was performed on days -9, 0, 5, 14, and 28. Multiple gastric biopsies were obtained endoscopically on day -9 to determine each dog's Helicobacter infection status. Four regions in the stomach and one region in the proximal duodenum were evaluated endoscopically, and each was assigned a score from 1 to 11. Scores for each region then were summed to give a total score for each endoscopic evaluation. Erosions and submucosal hemorrhages were seen in all dogs receiving aspirin. Only minor gastric lesions were observed in the carprofen, etodolac, and control groups. No adverse clinical signs were noted in any dog given any treatment. Median total score on days 0, 5, 14, and 28, respectively, were as follows: group 1: 5,0, 5.0, 5.0, 5.0; group 2: 5.0, 27.0, 26.0, 27.5; group 3: 5.0, 5.0, 6.0, 5.0;group4: 5.0,70,50,50

In the present study, administration of carprofen and etodolac to healthy dogs resulted in significantly fewer GI lesions than found in dogs receiving aspirin. There were no significant differences in the GI lesions in dogs receiving carprofen, etodolac, orplacebo. The study lasted only 28 days, however, and most animals with osteoarthritis require treatment for a longer period oftime. GI lesions may occur after long-term treatment with these drugs.

NSAID-induced GI lesions primarily are thought to be due to the inhibition of prostaglandin synthesis via inhibition of cyclooxygenase. The gastric and duodenal mucosa are rich in prostaglandins, which are important formaintenance of natural gastric mucosal defenses, including gastric blood flow, bicarbonate secretion, and mucus secretion. The NSAIDs inhibit production of endogenous prostaglandins, and gastric mucosal damage is attributed in part to prostaglandin deficiency.

Taken from: Reimer, M. E., et al., J Vet Intern Med 13 :472-477, 1999, as reported in VetMed, Vol. 6, Issue 2, March 2000, Iowa State University, Ames, IA

Worth Nothing

An earthquake, which occurred in Coastal South Carolina and is known as the Charleston quake of 1886, reached an estimated magnitude of 7.3 on the Richter scale. It caused structural damage as far away as Richmond, Virginia and Atlanta. It was the most damaging seismic event in U.S. history prior to the San Francisco quake of 1906.

The southeastern U.S. is in the middle of the North American plate and has far fewer major earthquakes than California, which is on the boundary between the North American and Pacific plates. This doesn't mean that the southeast can't or won't experience a "felt" earthquake. The potential exists for a major shock.

Virginia Tech Spectrum, VPI & SU, Vol. 22 No. 18, January 28, 2000

Separation-Related Behavior in Domestic Dogs

Undesirable behavior when the owner is absent is a common reason for dogs to be given up to animal charities or to be referred to a behavior counselor for treatment. A dog's reaction to separation can take several forms, including destructiveness (biting, chewing, and scratching of furniture or other materials, often near to where its owner has most recently left the premises; items bearing the owner's scent may also be destroyed), vocalization (barking, whining, or howling) and elimination (urinating, defecating, or vomiting). Elimination, together with rare types of behavior such as self-mutilation, has been interpreted as symptomatic of a general anxiety like state, whereas destructiveness and vocalization may often be attempts by the dog to restore contact with its owner.

Two studies were conducted to study separation behavior in dogs. A longitudinal study of seven litters of labrador retrievers and five litters of border collies from eight weeks to 18 months of age indicated that the majority showed some degree of potentially undesirable behavior when separated from their owners. The incidence of separation related behavior was initially highest in the labradors of which 13 of 23 showed separation-related behavior for more than a month, many of which were vocal when separated from their owners at three and six months of age. At 12 and 18 months, similar proportions of both breeds showed separation-behavior, mostly destructive. Social experiences during the primary socialization period, from three to 14 weeks, s profoundly influence the behavior of dogs towards people, but their behavior is also modified during the juvenile period, from three to 12 months approximately, when they may be refining their expectation of both the quantity and quality of social contact. Socially diverse environments experienced between six and 12 months of age were associated with a subsequent absence of separation-related behavior. A socially diverse environment is enhanced when 1) puppies have regular contact with people outside the breeder's own family, 2) puppies meet strangers regularly, and 3) puppies have regular contact with children.

A second, cross-sectional study of separation related behavior was made among a general population of pet dogs. In a questionnaire survey of dog owners, separation-related behavior was reported in 27 of 94 dogs, and a further 20 had shown the behavior in the past. Current separation-related behavior was three times more common in males than in females; two-thirds of the females, but only a third of the males, were reported never to have shown the behavior. The prevalence of the behavior was unaffected by whether the dog was pedigree or mixed breed, or whether it had been obtained from a breeder or from a rescue organization.

Separation-related behavior may be largely preventable, by giving the dog a wide variety of experiences between about five and 10 months of age. Also, puppies should have the opportunity to learn to cope with periods of isolation from people.

Taken from: Bradshaw, J. W. S., et al VetRec 151:43-46, 2002, as reported in VetMed, Volume 9, Issue 1, October 2002, Iowa State University, Ames, IA

Would you Believe?

The average American drinks 53 gallons of carbonated soda beverage annually. Coca Cola sells a billion soft drinks daily throughout the world.

The average American consumes 152 lbs. of sugar (not including artificial sweetners). Only about a quarter of the sugar we consume is added by the consumer. More than two-thirds comes in factory-made food, snacks and drinks. Most sweet processed foods are calorie-dense and nutrient deficient.

In our world, at least 1.5 billion people subsist on less than $1 per day.

KCR, November 1998

Infective Endocarditis in Dogs

Infective endocarditis (IE) most often affects young to middle-aged, large-breed dogs with no history of heart disease. Coagulase-positive staphylococci and streptococci are the most commonly associated bacteria. Clinical findings indicative of IE include fever, an inflammatory leukogram, a heart murmur of recent onset, and lameness; but these findings are not consistently present. Echocardiography and blood cultures are important aspects of the diagnostic database. The aortic or mitral valve is involved in almost 100% of cases; involvement of the aortic valve is most common. The echocardiographic appearance of aortic valve IE is pathognomonic. A diastolic murmer of aortic regurgitation is common and highly suggestive of IE. The femoral pulses associated with advanced aortic valve IE are bounding and quick. Long-term (6 to 8 weeks or longer), high-dose bactericidal antibiotic therapy is required to treat IE. Intravenous therapy should be maintained as long as possible (at least 2 weeks) and followed by subcutaneous administration. Combination therapy using clindamycin plus enrofloxacin is recommended. IE may be diffcult to recognize, often imitates immune-mediated or rickettsial diseases, and is usually lethal. Congestive heart failure is the usual out-come, especially with aortic valve IE.

Michelle Wall, DVM, Clay A. Calvert, DVM, DACVIM, Craig E. Greene, DMV, MS, DACVIM, University of Georgia, Compendium on Continuing Education for the Practicing Veterinarian, August 2002: Vol 24(8), as reported in Veterinay News, Penn State, University Park, PA

Postexposure Prophylaxis for Prevention of Rabies in Dogs

Objective: To evaluate postexposure prophylaxis (PEP) in dogs experimentally infected with rabies.

Procedure: Twenty-nine Beagles were sedated and inoculated in the right masseter muscle with a salivary gland homogenate from a naturally infected rabid dog (day 0). Six hours later, 5 dogs were treated by administration of 2 murine anti-rabies glycoprotein monoclonal antibodies (mAb) and commercial vaccine; 5 received mAb alone; 5 received purified, heat-treated, equine rabies immune globulin (PHTERIG) and vaccine; 5 received PHT-ERIG alone; 4 received vaccine alone, and 5 control dogs were not treated. The mAb or PHT-ERIG was administered at the site of rabies virus inoculation. Additional vaccine doses for groups mAb plus vaccine, PHT-ERIG plus vaccine, and vaccine alone were administered IM in the right hind limb on days 3, 7, 14, and 35.

Results: All control dogs and dogs that received only vaccine developed rabies. In the PHT-ERIG and vaccine group, 2 of 5 dogs were protected, whereas none were protected with PHT-ERIG alone. Use of mAb alone resulted in protection in 4 of 5 dogs. Administration of mAb in combination with vaccine provided protection in all 5 dogs.

Conclusions and Clinical Relevance: Current national guidelines recommend euthanasia or a 6month quarantine for unvaccinated animals exposed to rabies. Findings from this study document that vaccine alone following severe exposure was unable to provide protection from rabies. However, vaccine combined with mAb resulted in protection in all treated dogs, revealing the potential use of mAb in PEP against rabies in na~ve dogs.

Cathleen A. Hanlon, VMD, PhD; Michael Niezgoda, MS; Charles E. Rupprecht, VMD, PhD Am J VetRes 2002;63:1096-1100, as reported in Veterinay News, Penn State, University Park, PA

Nasal Oxygen Insufflation

Oxygen supplementation is an underutilized but very valuable part of supportive care for the critically ill patient. Examples of common clinical situations in which oxygen supplementation may be of benefit include dyspnea, seizures, congestive heart failure, head trauma, sepsis, pulmonary contusions, pulmonary thromboembolism, and pulmonary hypertension. Nasal oxygen supplementation has the advantage over other supplementation techniques in that it is easy, requires no specialized equipment, and allows close monitoring of the patient.

Various techniques of oxygen supplementation have been described in the dog and cat. One very useful technique is nasal oxygen insufflation. This procedure can be utilized in both dogs and cats. It involves placing a catheter in the nasal cavity and providing a humidified oxygen source. Any type of flexible urinary catheter or feeding tube can be used. In the author's clinic, pediatric feeding tubes or feeding tube/urethral catheters are used. The size of the catheter depends on the size of the patient; generally, 3.5 to 5.0 French (F) can be used in the cat, and 5.0 to 8.0 F can be used in the dog.

This procedure can normally be performed in the conscious patient. Mild sedation may be required in fractious patients. A topical anesthetic such as lidocaine (2%) or proparacaine will facilitate the placement. One or two drops in the nostril to be used will be adequate. The catheter is premeasured to the medial canthus of the eye. This is the distance the catheter must be passed via the external naris. Once placed, the tube can be attached using suture, super glue, or skin staples to the external naris, muzzle, and over he frontal sinus. Most animals will require an Elizabethan collar to prevent removal. The distal end of the catheter must be adapted to fit an oxygen line coming from a tank or wall oxygen. Different types of adapters are available. The most commonly used are catheter adapters, but tuberculin or 1 -cc syringes can also be modified and used.

Oxygen supplementation using this technique is expected to provide a fraction of inspired oxygen (PiO2) of approximately 40%. It is best to use humidified oxygen to prevent damage to the respiratory epithelium. Reusable humidifiers can be purchased or rented from medical grade oxygen suppliers. This technique can be used safely for three to four days. Oxygen toxicity is an uncommon complication in this scenario. The flow rate of oxygen should be approximately 0.1 L/kg per minute, but higher rates maybe necessary. Patients should be closely monitored by auscultation, blood gas analysis, pulse oximetry, or a combination of the above.

Taken from: Marks, S. L., J Amer Anim Hosp Assn 35:366-367, 1999, as reported in VetMed, Vol. 9, Issue 1, March 2000, Iowa State University, Ames, IA

Should I Let the Buyer Work in the Practice Before the Sale?

Once a buyer and seller have agreed on a price, they are both eager to finalize the sale. Each party is ready to begin a new life. This often makes the buyer eager to begin working in the practice. Sometimes, the seller needs the help and is happy to have the buyer come on in early. However, there are many details to work out before closing. This can be a tense time for all concerned since it means a dramatic change for both parties.

The closing date can and sometimes does drag on for months. Usually this is due to the time it takes to get the buyer's financing together and all the paperwork prepared and documented. We find that, once the buyer is actively working in the practice, he or she is no longer in such a hurry to finalize the sale.

Problems can quickly develop with employees, who don't have a clear idea of who is in charge. The new buyer is often eager to initiate new ideas and changes, some of which may conflict with current management. The resultant upheaval and confusion in the staff can lead to severe problems.

Occasionally a buyer may begin to question the purchase. The seller might start to doubt the ability of the buyer to nun the practice, especially if the seller is financing a portion of the sale.

For all the above reasons, and many more, having the new buyer work in the practice before the closing of the sale should be avoided if at all possible.

Lidocaine-Xylazine for Caudal Epidural Analgesis

Caudal epidural anesthesia is commonly utilized in veterinary medicine to allow diagnostic, obstetrical, and surgical intervention in the perineal region of large animals. The most frequently used local anesthetic agent is lidocaine although mepivacaine, bupivacaine, and procaine are also used. With the exception of bupivacaine, this group of agents provides analgesia of relatively short duration (20-180 minutes) and may necessitate readministration of the agent to allow completion of the procedure. In addition, local anesthetic agents indiscriminately block motor, sensory, and sympathetic fibers, causing ataxia, hind limb weakness, and occasionally recumbency.

Epidural and intrathecal administration of agents with greater duration of action may be more appropriate for procedures requiring long duration analgesia. These agents include opioids and alpha-2 adrenergic agonists which selectively block sensory fibers, thereby providing significant analgesia with decreased likelihood of rear limb dysfunction. Xylazine, an alpha-2 adrenergic agonist, has been used for caudal epidural analgesia in cattle. Although xylazine will provide relatively long periods of analgesia onset of analgesia is generally prolonged (30 minutes). Combinations of xylazine and lidocaine have been shown to provide rapid onset and long duration of analgesia in horses and llamas.

Research was done to directly compare the time to onset and duration of analgesia produced by a lidocaine/zylazine combination with that produced by lidocaine and zylazine administered alone in the caudal epidural space of dairy cattle. Nine adult (>4 years of age) dairy cows (520-613 kg) were used in this study. Caudal epidural analgesia was produced in all cows with 2% lidocaine (0.22 mg kg-'; 5.5 mL 500 kg-') 10% xylazine (0.05 mg kg ' diluted to 5.5mL 500 kg-' with sterile water); and 2% lidocaine/ 10% xylazine (0.22 mg kg-'/0.05 mg kg i; total volume of 5.7 mL 500 kg ').

No significant difference was noted for time of onset of analgesia between lidocaine (4.8 + 1.0 minutes) and the lidocaine/zylazine combination (5.1 + 0.9 minutes but onset of analgesia following xylazine was significantly longer (11.7 + 1.0 minutes) than either of the other two treatments. Lidocaine/ xylazine (302.8 + 11.0 minutes) produced analgesia of significantly longer duration than that of xylazine (252.9 + 18.9 minutes) and that produced by lidocaine (81.8 + 11.8 minutes). In all cattle, xylazine, administered either alone or with lidocaine, induced mild to moderate sedation and ataxia and cutaneous analgesia from the coccyx to T13. Mild ataxia was also present in those cattle receiving lidocaine alone.

The combination of xylazine and lidocaine produces analgesia of quicker onset and longer duration than xylazine administered alone and of longer duration than lidocaine administered alone. Utilizing this combination, long-duration obstetrical and surgical procedures could commence relatively soon after epidural infection and could be completed without re-administration of anesthetic agents.

Taken from: Grubb, T. L., et al Vet Anaes Analgesia 29:64-68, 2002, as reported in VetMed, Vol. 9, Issue 1, October 2002, Iowas State University, Ames, IA

Would You Believe?

During the 1990's a record 11 million foreigners immigrated to the USA. Even with this immigration the country's poverty level dropped from 13.1% to 12.4%. Single mothers and their children make up the largest group of the poor in America.

In parts of Saudia Arabia, 39% of all marriages are between first cousins.
In the U.S., 24 states ban the marriage of first cousins.

Opportunities in Continuing Education
Spring 2003

Date	Topic	Location	Contact Hours
March 7 & 8	**Applied Ultrasonography**	**Blacksburg**	**10**
April 4 & 5	**Introductory Echocardiography**	**Blacksburg**	**10**
April 25 & 26	**Diagnostic Ultrasonography**	**Blacksburg**	**10**
May 2-4	**Advanced Echocardiography**	**Blacksburg**	**21**
May 19-23	**Intensive Orthopedic Week**	**Blacksburg**	**40**

Please note:
The courses listed above are limited enrollment and feature a hands-on laboratory experience under the guidance of clinical faculty members. Program brochures provide course details. For more information, please contact **Anne Clapsaddle**, aclapsad@vt.edu (540) 231-5261; or to register for a program, please contact **Conference Registration**, Continuing Education Center, (540) 231-5182.

Hard Times

I assume that our Virginia readers are well aware of the state's budget problems, probably the worst in modern times. Readers in neighboring states may be aware of Virginia's budget problems but undoubtedly have a significant problem of their own. As a result of the huge deficit in state funding for all state colleges and universities, the operating fund allocations have been severely reduced for the 2003-04 biennium. This has caused Virginia Tech administrators to make some difficult choices as to what is funded and what is not. The net result for the Veterinary College has been the elimination of the Veterinary Cooperative Extension program in the College. This means the funding for our Extension specialists no longer exists and any funding for this newsletter is no longer available from state budget sources.

This is a severe blow to the College and to me personally as a former Extension specialist and the long time editor of VA-MD Veterinary Notes. As I search for possible newsletter funding I ask that you consider receiving the newsletter via our listserv or the internet @ www.vetmed.vt.edu. This would minimize our printing and mailing costs, and will perhaps be the only way to continue receiving VA-MD Veterinary Notes.

To sign up for the electronic newsletter, please e-mail your name and address to Anne Clapsaddle, aclapsad@vt.edu. We appreciate your understanding and cooperation as we strive to bring you useful information from Blacksburg

Kent Roberts, DVM

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COLLEGE OF VETERINARY MEDICINE
VIRGINIA TECH
BLACKSBURG, VIRGINIA 24061

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