VETERINARY TEACHING HOSPITAL

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WHAT'S INSIDE!

Kent C. Roberts, DVM
Extension Veterinarian

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

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INDICATIONS FOR AND ADVERSE EFFECTS OF MEGESTROL ACETATE IN CATS

Megestrol acetate is a synthetic derivative of a naturally occurring progesterone with potent antiestrogenic and glucocorticoid effects.[1,2] Although only labeled for use in dogs in the United States, megestrol acetate has widespread use in cats in the U.S. and is approved for the species in other countries.[1] Known by its trade name of Ovaban® in the U.S., megestrol acetate has a variety of clinical uses in feline medicine, but must be used with caution and knowledge of its possible side effects which can be more harmful to a cat's health than the problem for which it is being used.

Megestrol acetate is used in feline medicine for various dermatologic, reproductive, and behavioral conditions. Due to the drug's prolonged glucocorticoid-like effects, it is commonly prescribed for such dermatologic conditions as eosinophilic keratitis, feline acne, pemphigus foliaceus, and feline endocrine alopecia.[1] In addition, this progestogen has reproductive activity which can suppress estrus, prevent postcoital pregnancy, and maintain pregnancy in habitually aborting queens.[1,3] Inappropriate urination and urine spraying, the most common behavioral problem in cats for which veterinary counsel is sought, is effectively treated by megestrol acetate in approximately 30% of cats, with males responding to the treatment more often than females.[4] Other behavioral problems such as intermale aggression and aggressiveness towards humans may also be treated successfully with megestrol acetate. It is believed that the drug's progestational and supposed hypothalamic/limbic system effects result in the treatment of such behaviors.[1] Megestrol acetate is also used for a variety of other similar conditions in the feline, oftentimes when the cause of the condition is unknown or has been unresponsive to other treatments.

In spite of all the potential benefits of megestrol acetate treatment, the list of possible adverse reactions is long. Potential side effects to the reproductive system include benign mammary hypertrophy, mammary carcinoma, endometritis, and pyometritis.[1,2,5] It is believed that most documented cases of pyometritis in cats were probably induced by megestrol acetate. Doses too small to be effective in treating some of the normally responding skin conditions can still cause pathological uterine disorders.[2] Hypoadrenocorticism is another possible effect of megestrol acetate usage. Its consistent and reversible suppression of plasma ACTH concentration in treated cats suggests the effect is at least partly mediated through the hypothalamic-pituitary axis.[6] Another possible side effect of this drug is hyperinsulinemia with insulin resistance thought to be the major cause of the diabetes. The intrinsic glucocorticoid activity of megestrol acetate results in the progressive deterioration of glucose tolerance.[5] Although the glucose intolerance and diabetes mellitus usually resolve in most cats within a few weeks after withdrawal of the drug, it may be permanent in susceptible cats with limited pancreatic insulin reserve.[5] Additional potential changes include depression, weight gain, and temperament changes.[1]

Megestrol acetate, considered a wonder drug by many cat owners, can cause serious side effects that may not be worth the risk of the treatment. In many cases it can successfully treat various skin, behavior, and reproductive problems. However, the risk of pyometra, hypoadrenocorticism, diabetes mellitus and other disorders should be considered, monitored during treatment, and managed accordingly.

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--Article by Jennifer Renshaw, a third-year veterinary student at the University of Missouri. Society for Theriogenology Newsletter, Vol. 19, No. 5, Sept./Oct. 1996, as reported in Animal Health Spectrum, Mississippi State University, Volume 8, No. 1, January 1997.

INJECTABLE ANESTHESIA IN FERRETS

The domestic ferret (Mustela putorius furo) is becoming increasingly popular as a household pet. In 47 states, it is legal to keep domestic ferrets as pets. Veterinary care for ferrets ranges from non-invasive procedures, including complete physical examinations, nail clipping, ear cleaning, diagnostic whole body radiography, and dental prophylaxis, to invasive procedures, including blood sampling and surgery. Ferrets usually require sedation or anesthesia for these procedures.

Since we published (Vet Med: 88(11):1061-1065) the use of Telazol®-ketamine-xylazine (TKX), TKX has become widely used in cats by the practitioner. I have further evaluated the use of TKX in a controlled study in the ferret. The results showed that Telazol® (T, 22 mg/kg), ketamine-xylazine (KX, K@25 mg/kg, Xylazine@2 mg/kg), and Telazol®-ketamine-xylazine (TKX, T@3 mg/kg, K@2.4 mg/kg, Xylazine@0.6 mg/ kg) induced lateral recumbency in the ferret within 2 minutes following intramuscular (IM) injection. Glycopyrrolate (0.01 mg/kg, IM) was coadministered with each anesthetic combination to decrease secretions. The duration of analgesia, as evaluated by toe pinch, tail pinch, and skin pinch, was similar between KX and TKX (approximately 25-35 minutes) and significantly longer than the analgesia produced by Telazol® alone (approximately 10-15 minutes). The duration of endotracheal intubation for both KX and TKX was approximately 40 minutes, while the duration of endotracheal intubation for Telazol® alone was significantly shorter and more variable (2-15 minutes). For all times recorded during the 100-minute evaluation period, heart rate and systolic blood pressure were significantly higher with Telazol®) than KX and TKX. None of the ferrets became hypotensive when these combinations were used. There were no differences between the three groups in the time from injection until the ferret attempted to rise. However, time from injection until the ferret was completely mobile was significantly shorter with TKX (101.6 +/10.2 min) compared to KX (139.4 +/- 28.5 min) and Telazol® (188.0 +/- 42.8 min). Pulse oximetry suggested that there were short periods of hypoxemia (SpO_2 < 90%) in all three combinations during anesthesia. This was reversed (SpO_2 > 90%) with 100% oxygen insufflation. Quality of recovery, considered smooth in KX and TKX treated ferrets, was rough and frequently associated with opisthotonos, excessive paddling and swimming motions in ferrets treated with Telazol® alone.

It was concluded that KX and TKX were effective injectable anesthetic combinations in ferrets. Oxygen insufflation should be instituted during anesthetic periods when these drugs are used. Due to the short duration of analgesia and rough recovery, Telazol® alone, at the dose used in this study, was not recommended for use in ferrets.

In the clinical setting, TKX and KX have been used as injectable anesthetic combinations for short surgical procedures and induction agents in ferrets prior to the inhalant anesthesia. If the ferret is intubated and put on inhalant anesthetics (isoflurane or halothane) immediately following administration of these drug combinations, the percentage of the inhalant should be reduced. I suggest that the ferret be put on oxygen only until the ferret reacts to the surgical stimulation, then the inhalant anesthetic should be turned on to approximately 1%. If further reactions to surgical stimulation occurs, the percentage of the inhalant may be increased to 1.5% or 2%. Since both TKX and KX prolong recovery themselves, the ferret maintained on an inhalant, following either of these two drug combinations, should be removed from the inhalant or the inhalant reduced earlier than routine inhalant anesthetic procedures. I usually turn the vaporizer off 10 minutes before the procedure is finished and maintain the ferret on oxygen only for the remaining time. They should not react to surgical stimulation during this time because the procedure is usually minor (skin sutures) and the residual effect of the anesthetic provides adequate analgesia. **--Jeff C.H. Ko, DVM, MS, Dipl. ACVA, Assistant Professor of Anesthesiology, University of Florida, as reported in as reported in Florida Veterinary Scene, University of Florida, Vol. 6, No. 1, January 1997.**

THOUGHT FOR THE MONTH

People who ultimately succeed are those who never allow their direct experiences to overpower their vision and hope for the future. **--Christopher J. Hegarty**

NEW DISEASE IN MIDWEST DOGS

In an age of mystery diseases and frightening new viruses, it seems that no one - not even the family dog - is immmune. Researchers at the University of Missouri-Columbia College of Veterinary Medicine have been studying dysautonomia, a rare, usually terminal disease afflicting increasing numbers of dogs in parts of Missouri, Kansas, and Oklahoma. Originally reported as afflicting cats in England in epidemic proportions in the late 1980s, the disease has appeared with increasing frequency in dogs living in the southwest portion of Missouri and adjoining states. Marked by a variety of symptoms that may mimic less serious problems, such as vomiting, sensitivity to light, sneezing, difficulty urinating, and weight loss, the MU research team feels the disease may not be properly diagnosed in many animals. There is currently no effective treatment for the disease, which attacks the autonomic nervous system and plays havoc with basic body functions such as blood pressure, digestion, and urination. **Contact: Connie Beacker Mitchell,** (573)882-9144. **--Vet Med, Iowa State University Extension, Vol. 2, Issue 6, November 1996, as reported in Animal Health Beat, Vol. 12, No. 12, Dec 1996, University of Nevada-Reno.**

MAXIMIZING THE VALUE OF SKIN BIOPSIES

Many veterinarians are frustrated by results they receive concerning histopathologic findings reported on skin samples from animals with dermatologic disease. The following points will help to maximize the usefulness of this procedure.

1. *Don't expect a specific diagnosis.* Histopathologic evaluation of skin biopsies may provide a specific diagnosis. However, more often it provides information about the pathogenic mechanism in progress in the skin. For example, a biopsy may provide some evidence of an allergic disorder or immune-mediated disease without having the histopathologic changes present necessary to label the changes as a definitive "disease." These results are still useful to the clinician. Dermatohistologic findings should be considered as only one more piece of the puzzle. Other diagnostic tests are generally needed to make a definitive diagnosis.

2. *Submit a reasonable number of samples.* Submit at least two or three different samples. Remember that the pathologist is trying to make a diagnosis based on material you provide. Increase the chance that a diagnostic lesion is present by increasing the number of specimens submitted.

3. *Lesion selection is important.* If multiple lesions are present, and they usually are, take samples from lesions that are different. Try to get an early lesion, a mature lesion, and even a later stage (healing) lesion. This will increase the likelihood of a "diagnostic" lesion being present in samples you submit. In addition, don't fixate on taking biopsies at the edge of lesions. Edges are ideal, as long as you don't miss the lesion (which happens far too frequently). Only a tiny fraction of "normal skin" is needed in a biopsy sample.

4. *Lesion quality is crucial.* Please don't inject local anesthetics directly into the lesion. Subcutaneous injection is acceptable if the lesion is not in the subcutis, e.g. draining tracts. When removing skin samples from surrounding tissues, be careful not to crush the lesion with forceps. Crushing can create artifacts that resemble pathologic lesions or destroy lesions that are present.

5. *Place the sample in an appropriate amount of 10% buffered formalin and send samples in watertight non-breakable containers.*

6. *Provide the pathologist with a clear dermatologic history and your main differential diagnoses.* Even if the lesion is non-diagnostic, the pathologist may be able to help you by ruling out some of your clinical differential diagnoses.

--Submitted by: Dr. James O. Noxon, Veterinary Clinical Sciences, Iowa State University, Ames, IA, as reported in Vet Med, Vol. 3, No. 1, January 1997.

INTERVERTEBRAL DISK DISEASE IN DOGS

Dogs with thoracolumbar intervertebral disk disease (IVDD) may have clinical signs ranging from mild back pain to paraplegia with loss of pain perception. Dogs that have only signs of back pain may be treated conservatively, with or without intervertebral disk fenestration as a prophylactic measure. Decompressive surgery and mass removal has usually been reserved for use in dogs with neurologic deficits. Despite their lack of neurologic deficits, dogs with signs of back pain alone have been observed to have spinal cord compression demonstrable on myelography. Specific data on this population of dogs is scarce.

A retrospective case series study was conducted. Twenty-five dogs with IVDD and clinical signs of back pain only, without neurologic deficits, in which survey radiography of the vertebral column and diagnostic myelographic studies were performed, were included in this study. Spinal cord compression was detected on myelography in 20 of 25 (80%) dogs.

Treatment included decompressive surgery in 18 of 25 (72%) dogs and all dogs underwent intervertebral disk fenestration. The condition was improved in 24 of 25 (96%) dogs after surgery. Clinical implications are that dogs with thoracolumbar IVDD that have clinical signs of back pain alone, without neurologic deficits, may have substantial compression of the spinal cord. **--Vet Med, Iowa State University Extension, Vol. 2, Issue 6, November 1996, as reported in Animal Health Beat, Vol. 12, No. 12, Dec 1996, University of Nevada-Reno.**

LEPTOSPIROSIS IN DOGS

According to a recent scientific article, *Leptospira grippotyphosa* and other serovars like *L. Pomona* and *L. Bratislava* are becoming more important as causes of canine leptospirosis. Practitioners should be alert to continue to include leptospirosis in their differential diagnoses list for renal disease of the dog. Also, areas where canine leptospirosis from serovars other than *L. Canicola* and *L. Icterohemorrhagica* may be endemic, inclusion of these other serovars in a vaccination program should be considered because limited cross-protection between serovars occurs.

Proceed with caution if other serovars are used for vaccination, because the risk of hypersensitivity reactions with leptospira bacterins is one reason (along with rarity of canine leptospirosis) that some institutional clinicians have considered dropping or have dropped the use of leptospira bacterins in dogs. Anaphylactic reactions from vaccination are more likely on any dose subsequent to the first leptospira bacterin injection. Use in puppies less than 9 weeks of age is not recommended. Leptospira bacterin should not be administered to any dog with a history of possible anaphylaxis following a previous vaccine combination injection containing leptospira antigens.

Remember that another important reason to vaccinate is to try to minimize the risk of transmission of leptospira organisms (mainly through contaminated urine) to humans. Subclinical canine leptospirosis is more common than the acute form and may go undetected until humans exposed to infected dogs develop leptospirosis. Although leptospira bacterins may not prevent canine infection and the development of the carrier state (with urine shedding of leptospiras), vaccination may possibly reduce the number of organisms shed into the urine and thereby decrease the likelihood of human infection. **--C.A. Brown, W.W. Roberts, M.A. Miller et al. JAVMA, 209(7) Oct 1 '96; P.D. Mansfield, JAVMA 208(8) Apr 15 '96; R.F. Berg and R.C. Johnson, AJVR 43, May '82, as reported in Veterinary News, Pennsylvania State University, February 1997.**

EXOTIC PET CARE TIP

Why do pet birds get sick? This question can be answered with one word . . . malnutrition. Most of our bird clients feed their birds commercially prepared bird seed (at the recommendation of pet stores and bird breeders who "know"). The fact is that bird seed is deficient in 21 essential nutrients.

Long term maintenance on a nutritionally deficient diet leads to immunodeficiencies, reproductive failure, obesity, on and on. Birds who get sick from being in a draft are immunocompromised to start with. Most egg bound birds have some root problem with the calcium/phosphorous ratio. Obese birds (seeds are high in oils) often suffer fatty liver failure. What's a person to do? Feed pellets. There are several commercially prepared pellets: HBD, Zupreem, and Kaytee are three good brands. Pelleted bird food is no different than pelleted cat or dog food. It's complete, palatable and should be all that is fed to the bird. **--Dr. Alex G. Casuccio, as reported in WVVMA Fact Line, Volume 12, Issue 1, March 1997.**

VETERINARIAN RECEIVES NOBEL PRIZE

Dr. Peter Doherty, chairman of the Immunology Department at St. Jude Children's Research Hospital in Memphis, Tenn., and his colleague Rolf M. Zinkernagel, MD, have been honored with the 1996 Nobel Prize in medicine. Drs. Doherty and Zinkernagel split this year's $1.12 million prize for their revolutionary research in the field of immunology.

The research, dating back to 1973, first brought to light the fundamental requirements for T-cell initiation of an immune response. Their discovery opened the door to an understanding of the immune system that has advanced autoimmune disease research, vaccine design, organ transplantation, and the understanding of immune surveillance.

Dr. Doherty, a native of Australia, received his veterinary training at the University of Queensland. "I got very solid grounding from the best people in the university....I think my veterinary training was a very good background for basic research." **--Animal Health Update; Utah State University, November 1996, as reported in Florida Veterinary Scene, University of Florida, Vol. 6, No. 1, January 1997.**

SERVE LISTS

For veterinarians who have access to e-mail and would like to be in contact with other practitioners, many of the animal groups maintain a list serve through which interested parties ask questions, post notices, and exchange information. Many of the lists are open to the public while others are limited to members of a specific group. Following are some of the more popular "listservs" and the directions for subscribing.

SWINE-L sponsored by the American Association of Swine Practitioners
Address a message to: LISTSERV@tc.umn.edu
The first and only line of your message text (leave the subject line blank) should read
SUBSCRIBE SWINE-L John Doe (Use your name in place of John Doe.)
Then send the message. In a couple of days your name will be added to the mailing list and you should start receiving any mail addressed to Swine-L.

BEEF-L
Address a message to: ListProc@ListProc.WSU.EDU
Send a message containing the line
SUBSCRIBE Beef-L firstname lastname (substituting your actual name)

DAIRY-L
Address a message to ListServ@UMDD.UMD.EDU
Send a message containing the line
SUBSCRIBE DAIRY-L firstname lastname (substituting your actual name)

AABP-L (Access limited to AABP members only)
Address a message to listproc@upei.ca
SUBSCRIBE AABP-L firstname lastname (substituting your actual name)

--As reported in Ohio Veterinary Newsletter, The Ohio State University Extension, Volume 23, No. 1 & 2.

AIR TRANSPORT OF SEDATED PETS MAY BE FATAL

At a 1995 meeting between USDA and airline officials, the AVMA learned that oversedation is the most frequent cause of animal death during airline transport. Though very few of the thousands of animals transported during the past five years have died while being transported, investigations revealed that almost half the deaths resulted from sedation.

The second most frequent cause of death was environmental stress, especially in brachycephalic breeds. Third in frequency was disease complications from conoravirus, parvovirus, and respiratory diseases that were not evident during examination, but had a sudden, debilitating onset with the stress of transport at high altitude. Least common -- in fact, rare -- were deaths caused by mishandling by the carriers.

Except in unusual circumstances, veterinarians should not dispense or prescribe tranquilizers or other sedatives for animals that are to be transported. Little is known about the effects of sedation on animals that are under stress of transportation and are enclosed in cages at 8,000 feet or higher, the altitude at which cargo holds are pressurized.

Additionally, some animals react abnormally to sedatives. Although animals may be excitable while being handled during the trip to the airport and prior to loading, they probably revert to a quiescent resting state in the dark, closed cargo hold, and the sedative may have an excessive effect. It also appears that owners who observe an animal in an excitable state prior to shipment may increase the dosage and actually overdose the animal. Therefore, on the rare occasions sedation is necessary, owners should be educated about the effects and delayed onset of the sedative and be cautioned to follow the prescribed dosage.

Veterinarians should also warn owners of the brachycephalic breeds not to transport their pet during adverse conditions such as high heat and humidity, and should caution owners of animals with health problems that the stress of transport might exacerbate the condition.

The AVMA advises veterinarians to word Certificates of Acclimation as follows: "The animal in this shipment appears healthy for transport but needs to be maintained at a temperature within the animal's thermoneutral zone." **--As reported in WVVMA Fact Line, Volume 12, Issue 1, March 1997.**

CONTINUING EDUCATION OPPORTUNITIES

Date	Topic	Location	Contact Hours
March 14-15	Canine & Feline Reproduction	Blacksburg	10
March 21-22	Practical Eye Surgery	Blacksburg	10
March 29	Equine Reproduction	Leesburg	8
April 11-12	Gastrointestinal Endoscopy	Blacksburg	10
April 19	Anesthesia for Technicians	Blacksburg	6
May 23-24	Diagnostic Ultrasonography	Blacksburg	10
June 6-7	Echocardiography	Blacksburg	10
September 5-6	Orthopedic Surgery - Canine Forelimb	Blacksburg	10

Please note: The courses listed above are limited enrollment and feature a hands-on laboratory experience. Program brochures will provide course details. For registration or more information, please contact:

Dr. J.M. Bowen
VMRCVM - Virginia Tech
Blacksburg, VA 24061
(540) 231-7388

Dr. David Mitchell
Donaldson Brown Center
Virginia Tech
(540) 231-9340

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

Dr. J.M. Bowen - Extension Specialist - Equine
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Dr. W. Dee Whittier - Extension Specialist - Cattle

K.C. Roberts, Editor
Maura M. Wood, Production Manager of VIRGINIA VETERINARY NOTES

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