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29th Annual Veterinary Cancer Society Meeting

By Rance Gamblin, DVM, Dip ACVIM (Oncology)

At the Veterinary Cancer Society (VCS) annual meeting, veterinary oncology professionals from across the country learn about the latest developments and share stories from the field. The event has seen explosive growth. A meeting that once would have fit inside the conference room at Metropolitan Veterinary Hospital had more than 500 attendees at the recent meeting in Austin, Texas.

One of the most anticipated parts of the annual meeting is hearing the resident abstract presentations, which are split into basic and clinical science divisions. While I am a clinician exclusively, the basic science program still provides information that can be clinically relevant. Several examples:

- Residents from Cornell presented information regarding the synergistic antiproliferative effects of calcitriol with lomustine, vinblastine and imatinib on canine mast cell tumor lines in vitro. It's a safe bet that a study of the clinical utility of this combined therapy is in the works.
- Texas A&M residents demonstrated inhibition of feline vaccine associated sarcoma cell lines by mastinib, in combination with radiation therapy or doxorubicin/carboplatin chemotherapy.
- NCSU residents proved differential gene expression between metastatic and nonmetastatic canine soft tissue sarcomas, providing information on potential new therapeutic targets.

In the resident clinical sciences division, there were many relevant abstracts presented, including:

- Increased neutrophil counts and increased levels of monocyte chemotactic protein-1 (MCP-1) predict poorer treatment response and decreased survival in dogs with lymphoma.
- Radiation therapy may significantly improve control time and survival in dogs with oral lymphoma, but adjuvant chemotherapy may still be indicated.
- Cerenia® is effective at preventing delayed vomiting in dogs receiving doxorubicin. Prophylactic use may

eliminate the need for dose reductions due to GI side effects.

- Hydropulsion of nasal masses resulted in recovery of diagnostic material in 90 percent of cases. Additionally, the procedure often debulked the mass, improving clinical signs. However, this procedure should not be undertaken in animals with compromise to the cribriform plate.
- Re-irradiation of nasal tumors at time of relapse resulted in second remissions in most treated dogs. All dogs did develop late radiation side effects, but most were mild. Total blindness due to radiation retinopathy was reported in two of nine treated dogs.
- Cytology was shown to have poor sensitivity in the diagnosis of oral neoplasia.
- Periarticular histiocytic sarcomas appear to have a better prognosis than histiocytic sarcomas of other locations (median survival time of 391 days vs. 128 days).

The general sessions featured many good presentations. These are some of the most relevant for the veterinary practitioner:

- For dogs treated with the tyrosine kinase inhibitor mastinib (Kinavet®), control of mast cell disease at six months was significantly more important in predicting long-term control than was tumor response at six weeks. Short-term responses may be irrelevant in assessing clinical efficacy.
- Rhabdomyosarcomas are relatively uncommon tumors in veterinary medicine, but when they do occur they are commonly in younger patients and can have very aggressive clinical behavior. A University of Illinois study revealed a 73 percent metastatic rate at presentation with a stunningly short median survival time of only 14 days.

There were several great presentations on canine osteosarcoma with these pearls of wisdom shared:

- Administration of chemotherapy post development of metastasis in long-term (more than one year) survivors did not improve survival.
- Addition of gemcitabine to carboplatin did not improve survival times versus administration of carboplatin alone. This is interesting given the reported synergism between these two chemotherapy agents.
- Interim data suggests that alternating three doses each of carboplatin and doxorubicin is not superior to six doses of carboplatin given as a single agent.
- Increased monocyte counts, increased lymphocyte counts, increased ALP, humeral location, and young age at presentation were all associated

with poor outcomes in dogs with osteosarcoma.

Finally, my two favorite presentations:

- A veterinary student working in a private oncology referral practice in New Mexico presented data showing a 100 percent resolution rate for acanthomatous epulides treated with intralesional bleomycin. No recurrences were noted, with a median follow-up time of 842 days!
- Private oncologists from Arizona presented evidence that we likely should manage T cell lymphomas differently. Dogs with T and B cell lymphomas were given one dose of doxorubicin and the response determined dogs with B cell lymphoma responded 100 percent of the time, but those with T cell lymphomas responded only 50 percent of the time. Certainly, this lends support to the idea that we need to find a better way of treating T cell lymphoma than relying on doxorubicin-based regimens.

As you can see, there was a lot to see and hear at the VCS. For those of you with an interest in cutting-edge cancer medicine, consider joining the VCS by visiting its Web site at www.vetcancersociety.org.

MVRG's 2010 Spring Conference is Full!

There was an overwhelming response to our Spring Conference, scheduled for Sunday, April 11. As a result, we will schedule another seminar at a later date covering the same information. Thank you for your interest! If you were unable to reserve a spot for the conference, please call Michelle Fast at 330.664.6509. We'll add you to the list to be notified when the next conference is scheduled. The Spring Conference is made possible by Hill's™, Pfizer®, and Marshfield Clinic®.

Help us Update our Mailing List

You can assist in our efforts to keep pace with the changing local veterinary population. If you are receiving copies of this newsletter for someone no longer at your practice or would like to add someone, please call Kelli Riley at 330.670.2355.



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Specialist Spotlight

Electrical Cardioversion: A Shock to Set the Rhythm Right

By Lori Hitchcock, DVM, DACVIM (Cardiology)

Last fall, Metropolitan Veterinary Hospital updated its defibrillation unit with a Physio-Control LIFEPAK® 20 defibrillator. This device, in addition to its defibrillation capabilities, also allows electrical cardioversion and transcutaneous pacing.

Defibrillation is the delivery of an electrical shock to the chest wall or heart to depolarize a critical portion of the cardiac mass to allow a cardiac pacemaker (ideally the sinus node) to recommence control of the heart rhythm. Electrical cardioversion is a form of defibrillation that times the delivery of the shock to the QRS complex to avoid stimuli being delivered at a vulnerable phase of the cardiac cycle that might lead to ventricular fibrillation. Electrical cardioversion can be used to restore normal sinus rhythm in atrial fibrillation, other supraventricular tachycardias, and ventricular tachycardia.

Transcutaneous pacing involves delivery of a timed electrical shock through specially designed patches placed over the precordium to produce artificially triggered electrical depolarization. This provides a rapid way to stabilize animals with critical bradyarrhythmias such as third degree AV block and sinus arrest. It also provides an added measure of safety during permanent pacemaker implantation for these conditions.

The LIFEPAK 20 employs biphasic technology in shock delivery. Older defibrillators used monophasic shock waves, which deliver the impulse in only one direction. Biphasic defibrillation delivers the charge in one direction for half of the shock, and then reverses direction for the remainder of the shock. The cumulative energy necessary for defibrillation is significantly lower for biphasic versus monophasic shocks and the adverse effects of defibrillation on the myocardium are reduced with biphasic shocks. Since biphasic technology has become available, there has been renewed interest in electrical cardioversion of tachyarrhythmias in dogs, particularly atrial fibrillation.

Clinical case

A recent patient has benefited from this new technology. Harley, a 9-year-old bull terrier, was referred by Dr. Heidi Watters to Northeast Ohio Internal Medicine for recent onset of lethargy and labored breathing. He had no prior history of heart disease, however thoracic radiographs revealed cardiomegaly with severe left atrial enlargement and congestive heart failure (Figure 1). An ECG showed atrial fibrillation with a rapid ventricular response and occasional ventricular premature beats (Figure 2).

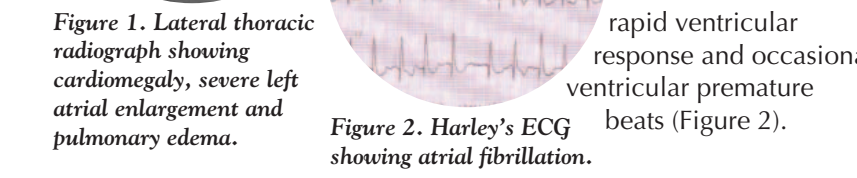


Figure 1. Lateral thoracic radiograph showing cardiomegaly, severe left atrial enlargement and pulmonary edema.

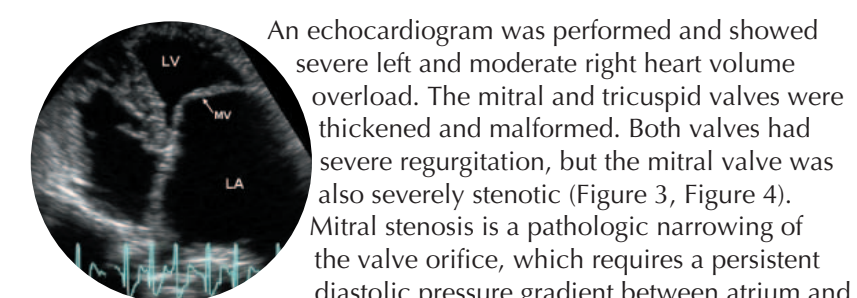


Figure 3. Left apical view of Harley's heart showing doming of the mitral valve leaflets in diastole.

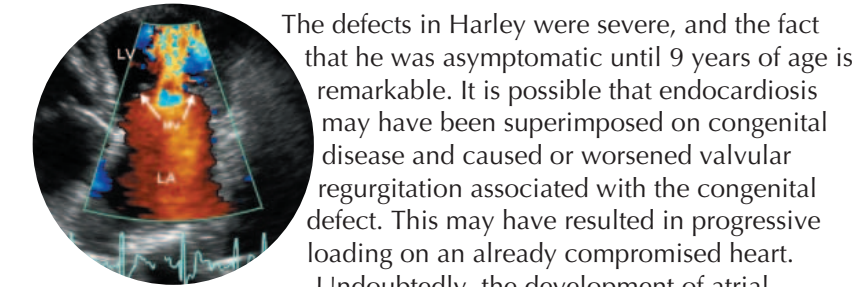


Figure 4. Left apical view of Harley's heart showing color flow across the stenotic mitral valve. Note the turbulent jet originating at the mitral valve and projecting toward the apex of the ventricle.

The presence of an atrial kick is vital in mitral stenosis. Because of the markedly narrowed valve annulus, the active atrial contraction plays a critical role in left ventricular filling. The loss of atrial contraction associated with atrial fibrillation, therefore, would drop forward cardiac output and dramatically increase left atrial pressures. In Harley, this led to signs of both congestive heart failure and forward cardiac failure.

Harley was hospitalized and treated for heart failure. With mitral stenosis, diuretics are the mainstay of medical therapy. ACE inhibitors and other vasodilator drugs must be used with great caution as forward flow may be limited and significant hypotension can occur. Pimobendan is controversial, as it is typically regarded as contraindicated for stenotic valve disease. However, it has been used with success in isolated cases of mitral stenosis in which valvular regurgitation was severe. Heart rate control, and ideally rhythm control, is vital in management. Harley was treated with furosemide, digoxin, and Dilacor XR® to resolve his pulmonary edema and stabilize his heart rate.

In some cases, mitral stenosis can be aggressively managed with interventional procedures such as balloon valvuloplasty or with surgical valvulotomy or valve replacement. These were not good options for Harley. The first two procedures have the potential to worsen the valvular regurgitation that was already severe in Harley. While valve

replacement would have been the best option for his mitral valve, the significant disease in his tricuspid valve would also need to be addressed. Combined mitral and tricuspid valve replacements have not been attempted, to this author's knowledge, in veterinary medicine.

Restoring Harley's heart rhythm to sinus was considered the most important factor in his long-term outcome. For this reason, electrical cardioversion was attempted once Harley's congestive heart failure was controlled. Using the LIFEPAK 20, a single 50J shock timed with his QRS complex was delivered and resulted in immediate conversion to sinus rhythm (Figure 5).

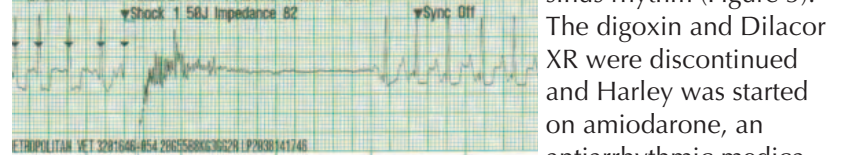


Figure 5. Cardioversion strip showing synchronization with the QRS complexes, delivery of the shock, a brief period of asystole and then return of sinus rhythm.

Thus far, Harley has maintained a sinus rhythm and is doing well. Enalapril has been cautiously introduced and his furosemide dose has been decreased. Recurrent atrial fibrillation is a significant future risk, and may again cause decompensation and heart failure if it returns. Amiodarone will be maintained for at least three months, or until side effects (which can be severe and include liver failure and immune-mediated blood dyscrasias) necessitate its withdrawal.

Electrical cardioversion of atrial fibrillation

In the past, treatment for atrial fibrillation in dogs and cats has focused on rate rather than rhythm control. Digoxin, along with a calcium channel blocker or beta blocker, was used to lessen the ventricular rate response. However, with the availability of biphasic cardioversion, there has been a paradigm shift in our thoughts on management of many animals with atrial fibrillation and the possibility of rhythm control is being revisited. In the largest paper evaluating biphasic electrical cardioversion for atrial fibrillation in dogs, restoration of sinus rhythm was achieved in over 90 percent of dogs. The presence of underlying heart disease or atrial enlargement had no effect on success of cardioversion. Duration of sinus rhythm following successful cardioversion is affected by underlying disease, however. Dogs with lone atrial fibrillation remained in sinus rhythm a median of 690 days versus only 73 days for dogs with underlying heart disease in this study.

Though electrical cardioversion has a high success rate even in animals with underlying heart disease, the relatively short duration of sinus rhythm in many of these animals has yet to provide a clear mandate for this method of management. In Harley, however, sinus rhythm is so important to maintenance of cardiac function that rhythm control was the first and best option in management. Thus far, he has responded exactly as we would have hoped.

Practice Points

Akron Veterinary Internal Medicine/Oncology Practice (AVIMP) is pleased to announce the addition of two more RVTs, Bethany Rohrer and Jackie Puleo. We are excited to have them join our growing practice. We would also like to announce that Pam Bugosh, a technician who has been with our practice for more than 10 years and in the veterinary field for 28 years, retired at the end of February. We have enjoyed having her as part of our team and wish her the best of luck with the next chapter in her life! Have you had a chance to review our practice information on the Web site? If not, please take a minute to do so at www.metropolitanvet.com. Click on Referral Group then select our practice. As an RDVM, you will be able to download referral forms, directions, satisfaction surveys and even submit them online. We hope you find the information helpful. If you think of anything else that would be helpful on the Web site for you or your clients, please let us know by calling 330.670.2351.

Northeast Ohio Internal Medicine Associates is currently evaluating patients with Atypical Cushing's Disease (ACD) for nutraceutical therapy and/or melatonin implants. The side effects and close monitoring required with Lysodren therapy may be avoided with the use of nutraceuticals such as melatonin and flax seed hulls (lignan portion). Melatonin implants allow for sustained therapy for three to four months. Please contact Dr. Turner, Dr. Frank or Dr. Beechler at 330.670.2355 to discuss any questions you may have about patients that may be candidates for these protocols.

Veterinary Ophthalmology Services of Northeast Ohio will once again participate in the ACVO/Merial National Service Dog Eye Exam Event. It allows us to help dogs who dedicate their lives to serving us. More than 150 board-certified veterinary ophthalmologists in the U.S. and Canada will provide free eye exams to thousands of service dogs. To qualify, dogs must be active "working dogs" that are certified by a national, regional or local formal training program or organization, or are currently enrolled in a formal training program. Specific service groups are listed at www.ACVOeyeexam.org. Owners/agents for the dog(s) must first register the animal via an online registration form, beginning April 1, at www.ACVOeyeexam.org. Registration ends May 16. Once registered online, the owner/agent can locate a participating ophthalmologist in their area and contact that doctor to schedule an appointment during the month of May. Appointment dates and times may vary, depending on the facility, and are filled on a first-come, first-served basis. Please contact Dr. Ellen Belknap at 330.670.2360 for any questions regarding ophthalmic issues.

Ohio Veterinary Cardiology's Dr. Hitchcock was excited to attend the symposium on heart failure for ACVIM cardiologists in New Orleans in mid-March. This two-day symposium featured panel discussions and exchange of ideas on management of canine and feline heart disease and heart failure. Next up, the ACVIM Forum will be held in June in Anaheim, Calif. The topic for the pre-forum symposium for cardiologists is interventional and pediatric cardiology, which is very timely as MVH just updated its fluoroscopy equipment with a new C-arm. To reach the practice, call 330.670.2376.

The doctors of **Ohio Veterinary Surgery and Neurology** want to make sure that, as referring veterinarians, your consultations and referrals are completed easily and quickly. During business hours we can be reached at 330.670.2358 (our receptionists are Kelli, Danielle or Denise) or at the MVH main desk, which is 330.666.2976. In emergent situations, we do our best to take the call immediately, so please let them know if that is the case. For consultations and less urgent referrals, we will either take the call immediately or call back as soon as possible. We also can receive information electronically for those interested in using e-mail or fax (330.666.0519). Drs. Daye (orthopedics), Padgett (soft-tissue/oncologic surgery) and Axlund (neurology/neurosurgery) can all be reached by using the e-mail address ovsnreception@metropolitanvet.com. Just specify which doctor you want to communicate with in the subject line of the e-mail. Please note, however, that we do not encourage the use of e-mail for time-sensitive issues. As always, if your question is urgent, please call the front desk and have us paged.

Vet-Rad radiologists Bennett Fagin, Bill Weber, Marianna Schafer, Todd Henrikson and Pat Rose provide service to approximately 500 veterinary hospitals across the United States. With a combined total of nearly 60 years of clinical experience, we welcome your questions regarding veterinary diagnostic imaging. If you are interested in submitting radiographs through the mail for a second opinion, Vet-Rad offers prepaid first class mailing labels for your convenience, at no cost to you. If your hospital has "gone digital" and is interested in second opinions, Vet-Rad's IT specialists may be able to link your hospital directly to our state-of-the-art teleradiology workstations in as little as 20 minutes, at no charge. Call 1.888.4.VETRAD (888.483.8723) for more information.