Partners in Care

VETERINARY REFERRAL NEWS FROM ANGELL ANIMAL MEDICAL CENTERS

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Angell-Boston's Neurology Specialty Service Offers State-Of-The-Art Treatment

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The Neurology group at Angell-Boston is uniquely qualified to offer diagnostic evaluation and treatment in the specialty of small animal neurology.

Our staff is comprised of two board-certified staff neurologists and a neurology resident who work collaboratively to provide optimal care in the diagnosis and treatment of small animal neurological diseases, both medical and surgical, with state-of-the-art equipment and facilities.

In keeping up with technology, the Neurology group at Angell recently implemented a new, ventrally-placed locking bone plate technology for surgical cervical stabilization of large breed dogs affected with dynamic and static stenosis forms of cervical vertebral instability (Wobbler Syndrome). This condition most commonly occurs in Doberman, Rottweiler and Great Dane dogs. However, older Dalmatians are also commonly affected. The success rate of correcting a dog's abnormal gait with this method has been quite high. Most dogs are able to go home to the owners within 24 hours of surgery with improvement in clinical signs becoming evident within just a few days after surgery.

Angell's neurologists diagnose and treat a wide range of both medically and surgically treated neurological diseases affecting veterinary patients including seizure disorders, vestibular disease, intervertebral disc disease, encephalitis, vertebral malformations and instability, brain tumors and neuromuscular diseases like myasthenia gravis. Commonly used diagnostic aids include evaluation of radiographs, cerebrospinal fluid analysis, MRI and CT scans, myelograms and electrodiagnostic testing which includes evaluating nerve conduction velocities as well as other electrophysiologic parameters.

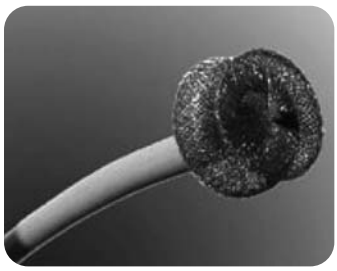
For more information or to refer clients to the Neurology Service at Angell-Boston, please call Natasha Bureau at 617 541-5140, email neurology@mspca.org or visit www.mspca.org/neurology.

Update: Amplatz Canine Ductal Occluder

For over ten years, the closure of a patent ductus arteriosus (PDA) could be accomplished in some patients using catheter-based delivery of embolization coils. However, many patients still required thoracotomy for ductal ligation as only smaller PDAs with an appropriate tapering morphology were good candidates for coil embolization. In addition, the placement of coils could be tricky and sometimes resulted in embolization of a coil into the pulmonary arterial circulation. Patients who had unsuccessful procedures required a thoracotomy.

A variety of occlusion devices are available for use in human patients for PDA closure. Although these systems can sometimes be used successfully in canine patients, their shape and design are not ideal for the canine ductus and the pricing of the devices remains high.

Early this year, after a large clinical series was successfully completed on dogs, Infiniti Medical commercially released the Amplatz Canine Ductal Occluder (ADO). This device was specifically designed for the canine species. It comes in a variety of sizes ranging from 3 mm to 14 mm. The ADO has facilitated closure of most PDA sizes and shapes in the cardiac catheterization lab. Although the device is not inexpensive ($650.00 USD), the pricing was made as veterinary-friendly as possible. It is clear based on our initial experience with the device that any increase in equipment cost will be offset by the decrease in anesthesia time and expense. Obviously, avoiding thoracotomy in many patients will significantly reduce recovery time and intensity of post operative management and expense.



Amplatz canine ductal occluding device.
(Photo courtesy of Infiniti Medical.)

When presented with a patient with a PDA, the ductal size and shape is determined echocardiographically, paying close attention to measurements of the pulmonic ostium (where the ductus connects with the main pulmonary artery). This allows approximate determination of appropriate occluder size and size of associated delivery catheters. A variety of device sizes are stocked as the angiographic measurements do not always correlate perfectly with those taken from the echocardiogram. Once the patient is under general anesthesia, vascular entry is achieved from the femoral artery. A calibration catheter is positioned into the ascending aorta and a contrast injection is made to evaluate the size and shape of the ductus. This allows precise measurement and selection of the proper device size, the most critical part of the procedure. The ADO is delivered through a catheter directed through the ductus ▶P2

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"Syndrome X": Some Still Do Not See It as a Disease

Rebecca L. Remillard, PhD, DVM, MS, DACVN

Rebecca Remillard, PhD, DVM, MS, DACVN is one of the two board-certified nutritionists in New England.

'Syndrome X' is reported to be a problem in at least 25-30% of the US dog and cat population. This means that a single veterinarian may see as many as 340 of these afflicted patients per practice at the rate of one per day. The diagnostics are relatively simple and inexpensive. 'Syndrome X' is responsible for pets having a reduced activity level, an impaired gait, traumatic and degenerative orthopedic disorders, decreased heat tolerance and stamina and early signs of aging. 'Syndrome X' is associated with dyspnea, congestive heart failure, dystocia, non-allergic dermatological problems and pancreatitis. We now know that 'Syndrome X' is associated with an increased risk of cancer (cystic transitional cell carcinoma and mammary cancer) and a shortened (1-2 years) life span. Good news: there is a treatment for our "healthy but obese" patients.

First described in 1988 as 'Syndrome X' in people, Metabolic Syndrome is a work in progress that is evolving in our collective thinking from a cluster of common chronic diseases (obesity, hyperlipidemias, cardiovascular disease and diabetes). Chronic low-grade systemic inflammation is a common feature of the metabolic syndrome with the inflammatory signal originating from visceral (not subcutaneous) adipose tissue. Abdominal fat stores increase as a result of chronic positive energy balance. White adipose tissue is now recognized to be a multifunctional organ; in addition to the central role of fat/energy storage, it has a major endocrine function secreting several hormones, notably leptin (pro-inflammatory) and adiponectin (anti-inflammatory) and a growing list of other protein mediators.
The term adipokines has been universally recommended to describe a protein that is secreted from adipocytes. Local adipose inflammation is thought to be the sentinel event that causes a systemic inflammation and subsequent insulin resistance.

There is an increased production of pro-inflammatory and a decrease in anti-inflammatory proteins by adipose tissue as the fat mass increases. This dysregulation between pro- and anti- inflammatory mediators from adipocytes may be the result of a local hypoxia that occurs within adipose as the fat mass increases. Subsequently, there is an increased plasma level of acute phase proteins and inflammatory cytokines which has led to the view that the obese patient is in a chronic state of low-grade inflammation. As abdominal fat stores increase, levels of circulating adipokines increase with increased levels of circulating free fatty acids (FFA) and there is clearly a concomitant decrease in insulin sensitivity (type 2 diabetes) in people and mice models. TNF-alpha and FFA have been shown to disrupt the intracellular transduction signals of insulin. These patients are also in a chronic state of oxidative stress with increased circulating ROS (reactive oxygen species) levels which play a critical role in the pathogenesis of vascular and glomerular diseases.

Information published in the last 3-4 years would support that 'Syndrome X' is occurring in our obese patients as well. Plasma TNF-alpha and IGF-1 levels were significantly higher when ideal weight dogs were made obese. (Blanchard et al 2004) (Gayet et al 2003). Dogs made obese had increasing levels of TNF-alpha and became progressively insulin resistant as fat mass increased (Gayet et al 2004). Plasma TNF-alpha and IL-1 were significantly higher and insulin sensitivity decreased in mares with a higher percent of body fat (Vick et al 2007).

Again, the good news is that these trends are reversed with weight loss. Obese cats placed on a 12 week weight loss diet had significantly lower plasma markers of oxidative stress and inflammation (Saker et al 2004). Weight gain in dogs resulted in decreased insulin sensitivity: however, during weight loss, insulin sensitivity returned to pre-obese state (Gayet et al 2003). TNF-alpha and IGF-1 levels were significantly lower and insulin sensitivity increased when obese dogs lost weight to ideal (Blanchard et al 2004).

I believe features of the Metabolic Syndrome ('Syndrome X') as described in people exist in our overweight/obese patients. I suggest obesity is causing a chronic low-grade highly oxidative pro-inflammatory state in our patients which links now seemingly unrelated vague conditions (renal insufficiency, pancreatitis, degenerative diseases and advanced aging) to obesity. Therefore, at every opportunity, from the first puppy wellness to the geriatric visit, we are obligated to speak with owners about weight control.

Update ▶PI

into the main pulmonary artery. The ADO is advanced until the proximal phalange is deployed. The catheter is then pulled back into the ductus until the retention device engages. The second phalange is then deployed into the ductal ampulla where, if sized and positioned appropriately, it will be in a stable, secure position. Complete closure of the ductus is generally noted within fifteen minutes of placement.

The main limitation for the use of the ADO is the size of the patient as the delivery devices range in size from 8 – 10 French (quite large related to the small vessel size in some patients). Patients ranging in size from 3.0 kg to 32 kg have been successfully treated using the ADO thus far, making this the preferred therapeutic option for most patients with patent ductus arteriosus.

For more information or to refer cases to the cardiology service at Angell-Boston please call Robin Grammer at 617 541-5038, email cardiology@mspca.org or visit www.mspca.org/cardiology.

Emergency Service and Critical Care Case Study

Catherine Foley, DVM, (Emergency/Critical Care Resident)

Duke prior to the onset of his illnesses.

Departments Emergency Service and Critical Care Unit

Clinicians Catherine Foley, DVM, Resident Emergency/Critical Care

Patient Currently a one-year-old castrated male English Bulldog

History and presenting concern Duke, an English Bulldog, had been admitted multiple times to the Angell Animal Medical Center-Boston for aspiration pneumonia due to chronic regurgitation at six months of age. His regurgitation was attributed to a possible esophageal motility disorder. A full work-up for esophageal motility would have included a barium swallow study, but due to his repeated episodes of aspiration pneumonia, the owners and veterinarian on the case agreed to delay this imaging due to concern about aspiration of barium should he regurgitate during the imaging study. With this suspicion, he was placed on metoclopramide to assist with GI motility and sucralfate for esophagitis. He was also born with an elongated soft palate and stenotic nares, which were surgically corrected several months prior to his last presentation. Upon presentation, at 10 months of age, he was suffering from aspiration pneumonia again.

Initial Therapy He was admitted to the Critical Care Unit for aspiration pneumonia therapy. Several hours after admission, he was experiencing progressive dyspnea and exhaustion. Despite oxygen therapy, his oxygen saturation was poor and mechanical ventilation became necessary due to pneumonia and physical exhaustion.

Diagnosis/Treatment With owner consent, he was mechanically ventilated for 2 days. Upon weaning from the ventilator, his head, neck and upper airway experienced progressive swelling/edema that did not respond to medical therapy. A temporary tracheostomy was performed to provide time for the upper airway swelling to cease. He functioned well with the temporary tracheostomy for several days and was fully weaned from the ventilator and supplemental oxygen. However, Duke responded poorly to our attempts to remove the tracheostomy tube; his oxygen saturation would drop rapidly and cyanosis would ensue.

An oropharyngeal exam was performed under sedation four days after mechanical ventilation was discontinued and there was no evidence of residual swelling. However, the larynx was not functioning well. A permanent tracheostomy was recommended by the staff surgeons.

His owners consented to a permanent tracheostomy and castration. Several days after the tracheostomy, the site began to constrict and his skin folds were partially occluding the site. The owners consented to a skin fold revision where his jowls were tacked/stapled out of the way to improve airflow into the permanent tracheostomy.

Follow Up He has responded well at home with occasional bouts of regurgitation and mucus build-up in his tracheostomy site. Airway drying was suspected to be a major contributor to his problem, so a humidifier and a PRN prescription of Mucinex and N-acetylcysteine were prescribed. The owners were instructed to draw up ~ 3 cc of N-acetylcysteine and inject into his tracheostomy site directly as needed. In addition to the airway management, his chronic regurgitation is managed with feeding of w/d meatballs, metoclopramide PO TID 20 minutes before feeding, and sucralfate as needed during times of regurgitation.

For more information Angell Animal Medical Center-Boston Emergency Service is open 24 hours, seven days a week. This service is staffed by a group of emergency and critical care specialists, residents and interns. We have streamlined this service to deal with true emergencies only. The direct line for referring veterinarians only is 617 522-5011.

In an emergency situation, if the patient is being referred, the referral form must be completed and may either be brought in with the owner or faxed to 617 522-7408, Monday-Friday, 7:30am-4:30pm. At all other times, please fax referral forms to 617 522-4885.

Duke received months of care at Angell Animal Medical Center.

Duke with his temporary tracheostemy prior to permanent installation.

About Angell CE Seminars

Veterinary CE Seminars are held each Friday between 8-9am at Angell Animal Medical Center's Munson-Blakely auditorium. Topics are presented by a senior staff member, a resident, an intern paired with a senior staff member, or occasionally, an outside guest speaker.

These seminars qualify for continuing education credits (1 hour = 1 CE credit) in Massachusetts. No registration or fee is required.

For more information, please call Theresa Milne at 617 524-5635 or log onto www.mspca.org/ce for more information.

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Angell Animal Medical Center Referral Guide

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Email: cardiology@mspca.org Website: www.mspca.org/cardiology

Dermatology Service
Referral Liaison: Rebecca Stlaske
Referral Line: 617 524-5733 Referral Fax: 617 989-1613
Email: dermatology@mspca.org Website: www.mspca.org/dermatology

Neurology Service
Referral Liaison: Natasha Bureau
Referral Line: 617 541-5140 Referral Fax: 617 989-1666
Email: neurology@mspca.org Website: www.mspca.org/neurology

Oncology Service
Referral Liaison: Gary Vanasse
Referral Line: 617 541-5136 Referral Fax: 617 541-5130
Email: oncology@mspca.org Website: www.mspca.org/oncology

Pain Medicine Service
Referral Liaison: Natasha Bureau
Referral Line: 617-541-5140 Referral Fax: 617-989-1666
Email: painmedicine@mspca.org Website: www.mspca.org/painmedicine

For all other referrals, please continue to call Eleanor Cousino, Angell-Boston referral coordinator at 617 522-5011.

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