**Specialty Care for Avian and Exotic Animals**

With only 127 board-certified avian and exotic specialists in the world, Angell Animal Medical Center is proud to have two of them on our team. The Avian and Exotics service is staffed seven days a week, and consists of one resident, four technicians and two board-certified avian specialists.

Optimal wellness and emergency and critical care for avian, small mammal, reptile or other exotic pets require experienced veterinary management, specialized diagnostic and treatment protocols and state-of-the-art equipment and facilities designed for these special species. Angell provides these, all under one roof.

**Advanced Technology Saves Thousands of Lives at Angell**

Angell Animal Medical Center takes pride in keeping up with technology to ensure that patients receive the best possible care. Angell’s Emergency and Critical Care Unit (ECCU) treats approximately 15,000 patients per year and responds to trauma 24 hours a day. The ECCU department includes four board-certified specialists and offers state-of-the-art technology to handle every emergency.

The ECCU staff has come to depend on one piece of equipment in particular — a respirator that performs mechanical ventilation. This is used on animals with respiratory failure after trauma to the lungs, pneumonia or systemic disease that is severe enough to affect lung function. The animal must be heavily sedated or anesthetized and requires constant supervision and monitoring by nurses and doctors. ECCU’s four senior staff veterinarians, eight residents and critical care nurses use a team approach to monitor and manage these cases of critically ill pets on the respirator.

The ECCU’s monitoring capabilities include direct and indirect arterial blood pressure, coagulation parameters, blood chemistries and blood gases. Telemetry and most recently, co-oximetry. Co-oximetry allows the staff to measure blood for methemoglobin and carbon monoxide levels when acetonemia or carbon monoxide poisoning are suspected. An advancement in the near future will allow the staff to have the ability to monitor blood oxygenation and carbon dioxide pressure.

Specially constructed oxygen cages are available in addition to ventilator therapy. The Emergency and Critical Care Unit is also equipped to handle any other emergency, including surgery, emergency surgery and blood and plasma transfusions thanks to access to Angell’s full blood bank. The ECCU staff benefits from access to board-certified veterinarians in Angell’s other specialty services such as radiology, neurology, surgery, internal medicine, pathology, ophthalmology and dermatology when consultation and advanced diagnostics are needed.

To refer a patient to the Emergency and Critical Care service at Angell, please call Referral Coordinator Eleanor Cousino at 617 522-5011. For more information about the service, please visit www.mspca.org/emergency.

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**The Avian and Exotics team frequently performs surgery on exotic pets such as guinea pigs.**

Our nationally recognized veterinarians, Connie Orcutt, DVM, DABVP, Avian and Jennifer Graham, DVM, DABVP-Avian, DACZM, have years of experience treating numerous exotic species, including birds, rabbits, ferrets, guinea pigs, rodents, special small mammals (such as chinchillas or hedgehogs), reptiles and amphibians. They treat over 4,000 patients each year.

Angell offers specifically designed general and isolation wards for care of complex cases. An advancement in the near future will allow the staff to have the ability to monitor blood oxygenation and carbon dioxide pressure.

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**Case Study**

**Patient:** Zoe, a 13-year-old spayed female Miniature Schnauzer

**History and Presenting Concern**
Zoe, a Miniature Schnauzer, presented for treatment of severe halitosis. Periodontal disease is certain not unusual for a Miniature Schnauzer (or any other small breed dog), but over the previous two years, Zoe had been diagnosed with a heart murmur, cataracts, and renal degeneration, hyperlipidemia, and seizures. Historically, many veterinarians would have balked at placing such a patient under anesthesia for a “dental.” However, Zoe’s owners were (rightly) concerned about the dental disease adversely affecting Zoe’s quality of life (and everyone with a functional sense of smell), and exacerbating her other medical issues. Oral examination revealed severe generalized calculus, several loose teeth, and hair trapped between some teeth. A plan was made to consult with Zoe’s cardiologist, Dr. Rebecca Malakoff, and neurologist, Dr. Debbie Rauhmann, to put together an anesthesia protocol to make the dental procedure as safe as possible. In addition to Zoe’s medical problems, she was on Kepra, Analapril, and fish oil supplements.

**Diagnosis and Treatment**

While Zoe was under anesthesia, a complete periodontal examination, including dental radiographs, was performed. Many teeth were loose and some had root abscesses. Zoe lost most of her incisors and molars and several premolars. Her remaining teeth were scaled and polished. She had a surprisingly quick and smooth recovery and was discharged the same evening. Chlorhexidine oral rinse, Tramadol and instructions to finish a course of Clavamox were dispensed.

Zoe’s recheck exam took place four weeks after the dental procedure. The tooth extraction sites had healed well with only a few suture remnants remaining. Her owners could not believe how well she was doing and called her “a whole new dog!” Her appetite and activity had improved greatly within days of the dental procedure, not to mention her breath!

**Clinical Brief**

**Hyperaldosteronism**

Doug Brum, DVM

Two of the most common problems seen in older cats are chronic renal disease and hypertension. Some of these cats also have a mild to moderate hypokalemia. An emerging diagnosis in a number of them is hyperaldosteronism, and it is one that can be easily missed. As of 2003, only five cases of primary hyperaldosteronism had been reported in veterinary literature. It was considered a very unusual condition. However, in the past several years, numerous publications have described the syndrome, and it is being identified with more frequency by clinicians around the country. It definitely should not be considered a rare condition anymore.

Excess production of aldosterone may be the result of primary or secondary causes. Primary hyperaldosteronism is due to the autonomous secretion of aldosterone by abnormal cells in the adrenal gland. This can either be due to an adrenal tumor or from bilateral adrenal hyperplasia. In people, this is a very important condition (Conn’s syndrome), as it is a potential curable cause of hypertension. Secondary causes are rare, resulting from some other condition in which excess aldosterone production is a normal adrenal response to the activation of the renin angiotensin system (RAS). These include kidney, liver (cirrhosis) or cardiac disease—states associated with peripheral edema.

The main function of aldosterone is the regulation of serum sodium and potassium homeostasis while maintaining normal vascular fluid volume. When aldosterone levels increase, potassium is lost through the kidneys and sodium is retained. In causing sodium conservation, aldosterone indirectly causes conservation of water, which raises blood volume and increases blood pressure. This expansion of the extracellular fluid volume and the conservation of sodium leads to suppression of the RAS, decreased renin plasma levels and hypertension. Chronically elevated aldosterone levels may also contribute to the progression of kidney damage by promoting thrombosis and fibrosis. The disease occurs much more commonly in cats, and it is very rare in dogs. It has been reported in cats between six and 20 years of age. The main clinical problems are related to the hypokalemia and hypertension that occur with excessive aldosterone levels. Weakness and a polydipsia/polyuria syndrome are commonly seen. Retinal detachments and blindness are also common clinical signs. Other less common clinical presentations include polycythemia, polycythemia vera (and rarely) respiratory failure. Occasionally it is diagnosed in asymptomatic cats.

Diagnosing the disease can be challenging, as it is often overlooked in cases of unexplained hypertension or hypokalemia. Primary hyperaldosteronism should be considered as a differential diagnosis in middle-aged and older cats with hypokalemia, polycythemia and/or systemic hypertension. If the disease is suspected, an adrenal ultrasound should be performed. Unilateral adrenal masses may be seen. More commonly, only very subtle changes in the adrenal compatible with nodular hyperplasia may be noted. Ideally, plasma aldosterone levels should be measured, and significant elevations are generally seen. In primary hyperaldosteronism with elevated aldosterone levels, there is a corresponding decrease in plasma renin activity, demonstrating a renin-aldosterone dissociation. This decreased plasma renin level in light of an elevated aldosterone level (or the plasma aldosterone/renin ratio) is the human standard for diagnosis. Unfortunately, there is no commercially available assay for plasma renin activity at this time in North America.

When hyperaldosteronism is diagnosed, treatment is either surgical removal of the affected adrenal gland if a tumor is present, or medical management. Medical management is the treatment of choice in bilateral adrenal hyperplasia, or when the cat’s clinical condition makes surgery a poor option. Medical treatment is based on controlling the hypertension and hypokalemia. Initially, IV potassium chloride may be needed to correct the electrocardiogram abnormalities (not to exceed 0.5mEq/kg/day) in cases of severe hypokalemia. Oral stable, oral potassium gluconate should be started at 2-6mEq/kg/day.

The dose may then be adjusted as indicated. Hypertension is treated initially with Spironolactone (2-4mg/kg/day), a potassium-sparing diuretic. Spironolactone should be the treatment of choice, as it is a synthetic homologue and competitive antagonist of aldosterone. If further blood pressure control is needed, then amiodipine (0.625-1.25mg/kg/day) can be added. The prognosis is variable, but some cats survive for years with just medical management. The clinician should always consider hyperaldosteronism as a diagnosis in any middle-aged to older cat with hypokalemia (especially if associated with a polydipsia/polyuria) and/or systemic hypertension.

For more information, or to refer a client to the Internal Medicine service at Angell, please call Referral Coordinator Eleanor Cousins at 617 522-5011 or visit www.mspca.org/internalmedicine.

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**Dentistry**

William Rosenblad, DVM

Dental disease, specifically periodontal disease, is the most common disease in dogs and cats. The veterinary profession is becoming increasingly aware of not only how much dental disease is out there, but also, as noted in Zoe’s case, how proper treatment can make such a dramatic difference. In humans, dental disease has been linked to a significant number of systemic illnesses, including chronic inflammatory diseases. We are now more fearful of the progression of dental disease, including exacerbation of other diseases, than of properly performed and monitored anesthesia.

The Dentistry service is lead by two experienced veterinarians, and a team of technicians, whose practice is fully dedicated to animal dentistry. The service is capable of treating periodontal disease, fractured teeth, malocclusions, jaw fractures, oral tumors, feline respiratory lesions and stomatitis. In addition, the dentistry staff frequently works with other specialists at Angell to prepare and manage patients with special anesthesia needs.

For more information, or to refer a patient to the Dentistry service, please call Referral Coordinator Eleanor Cousins at 617 522-5011 or visit www.mspca.org/dentistry.