

**CARDIOLOGY**

**Comparison of Auscultatory and Echocardiographic Findings in Healthy Adult Cats**


*Journal of Veterinary Cardiology* 2010; 12:171-182.

This study examined the prevalence of heart murmurs and echocardiographic evidence of heart disease in a population of 199 healthy cats. A heart murmur was detected in a relatively high percentage (35%) of cats. The majority of murmurs (72%) were relatively soft (grade 2 or 3). Of the 61 cats with a heart murmur that underwent echocardiography, left ventricular hypertrophy was detected in 26 (43%) while the remaining 35 cats (57%) were considered normal. Thus, the presence of a heart murmur in an adult cat is not necessarily an indicator of underlying heart disease. While the presence of a heart murmur increases the likelihood of underlying disease, many heart murmurs in cats are found to be innocent and of little clinical consequence. Echocardiography is indicated to rule out the presence of heart disease if a murmur is detected in an otherwise healthy cat.

*Mark Oyama, DVM, Diplomate ACVIM (Cardiology), University of Pennsylvania*

**Critical Points**

- The prevalence of heart murmurs and echocardiographic evidence of heart disease was studied in 199 healthy cats.
- Heart murmurs were detected in 35% of cats; 72% of murmurs were relatively soft (grade 2 or 3).
- Of the 61 cats with the heart murmurs, echocardiography detected left ventricular hypertrophy in 43%.
- The presence of a heart murmur in an asymptomatic adult cat is not necessarily an indicator of underlying heart disease.

Visit our website, [todaysveterinarypractice.com](http://todaysveterinarypractice.com), to read Dr. Oyama’s article *Cardiac Blood Tests in Cats* (September/October 2011 issue), which discusses additional diagnostics for detecting asymptomatic heart disease in cats.

---

**UROLOGY**

**Frequency of Incomplete Urolith Removal, Complications, and Diagnostic Imaging Following Cystotomy for Removal of Uroliths from the Lower Urinary Tract in Dogs: 128 Cases (1994-2006)**

Grant DC, Harper TAM, Were SR.

*Journal of the American Veterinary Medical Association* 2010; 236:763-766.

This study retrospectively reviewed 128 cases of dogs that underwent cystotomy for removal of urocystoliths, urethroliths, or both. The effectiveness of cystotomy could be determined in 44 (34%) dogs, 9 (20%) of which had incomplete removal of uroliths. Appropriate postoperative imaging for uroliths was defined as plain radiography for radio-opaque uroliths, ultrasound or double-contrast cystography for urocystolith types, or positive-contrast urethrography for urethrolith types). The appropriate type of postoperative imaging was selected for only 19 (15%) dogs, 8 of which had incomplete removal. Dogs with both urethroliths and urocystoliths were more likely to have incomplete removal compared to dogs with only urethroliths or urocystoliths. These results demonstrate that incomplete urolith removal is common in dogs undergoing cystotomy and stress the importance of appropriate postoperative imaging.

*Greg Grauer, DVM, MS, Diplomate ACVIM (Small Animal Internal Medicine), Kansas State University*

**Critical Points**

- The cases of 128 dogs that underwent cystotomy for removal of urocystoliths, urethroliths, or both were retrospectively reviewed.
- Cystotomy effectiveness could be determined in 44 (34%) dogs; 9 (20%) had incomplete removal of uroliths. Dogs with both urethroliths and urocystoliths were more likely to have incomplete removal.
- The appropriate type of postoperative imaging (plain radiography, double-contrast cystography, or positive-contrast urethrography) was selected for only 19 (15%) dogs, 8 of which had incomplete removal.
- Incomplete urolith removal is common in dogs undergoing cystotomy, which stresses the importance of appropriate postoperative imaging.
KIDNEY DISEASE & PHARMACOLOGY

Retrospective Case Control Study of the Effects of Long-Term Dosing with Meloxicam on Renal Function in Aged Cats with Degenerative Joint Disease

This study evaluated the medical records of 38 cats with degenerative joint disease receiving meloxicam for relief of pain. Cats were over 7 years of age and had been on meloxicam continuously for a minimum of 6 months. They were divided into 2 groups: those with stable pre-existing renal disease and those with no evidence of renal disease. Progression of renal disease in the renal group and nonrenal group of cats were compared to 2 groups of age- and International Renal Interest Society (IRIS)-matched control cats not receiving meloxicam.

The 22 cats in the renal group were classified into the following IRIS categories: Stage 1=8; Stage 2=13; Stage 3=1 (median age was 15.5 years). None had increased urine protein:creatinine ratios (ie, UPC < 0.4). The 16 cats in the nonrenal group had a median age of 13.4 years. The median treatment duration for renal group cats was 467 days; for nonrenal group, 327 days. After titration to the lowest effective dose, the median maintenance dose was 0.02 mg/kg/day in both groups.

There was no difference in sequential serum creatinine concentration or urine specific gravity measurements between the nonrenal group treated with meloxicam compared to control cats not receiving meloxicam. There was less progression of renal disease in cats with mild to moderate disease; however, the number of cats with severe disease was too small to draw further conclusions.

Critical Points
• Cats over 7 years of age with degenerative joint disease were treated for over 6 months with oral meloxicam on a daily basis.
• Cats with stable pre-existing IRIS Stages 1 to 3 chronic renal disease were compared to cats on the same regimen without pre-existing renal disease and to age and IRIS-Stage matched cats not receiving meloxicam.
• A low dose of 0.02 mg/kg meloxicam for long-term maintenance in cats with stable pre-existing renal disease did not cause decline in renal function.
• Further information about IRIS staging of renal disease can be found at iris-kidney.com.

Margie Scherk, DVM, Diplomate ABVP (Feline Practice), CatsINK, Vancouver, British Columbia, Canada

GASTROENTEROLOGY

Clinical Factors Associated with Death before Discharge and Overall Survival Time in Dogs with Generalized Megaesophagus
McBrearty AR, Ramsey IK, Courcier EA, et al.

This study retrospectively evaluated the records of 71 dogs diagnosed with generalized megaesophagus. Six variables were assessed for their association with in-hospital mortality and overall survival time: (1) age of onset of clinical signs, (2) body weight, (3) nutritional status, (4) concurrent aspiration pneumonia, (5) use of esophageal protectant medications, and (6) esophageal diameter.

The overall median survival time was 90 days. Survival curves showed that many patients died in the days immediately following diagnosis of megaesophagus, potentially due to concurrent pneumonia. The death rate began to slow after the initial period and 22% of dogs were still alive 5 years after diagnosis.

The prevalence of aspiration pneumonia was 45.1%; this was the only variable significantly associated with both death before discharge and overall survival time (27% of dogs did not survive until discharge; aspiration pneumonia was diagnosed in 79% of that subgroup). This article suggested that dogs with megaesophagus should be evaluated for evidence of aspiration pneumonia, as this may affect both short- and long-term survival.

Critical Points
• This study evaluated 6 variables associated with in-hospital mortality and overall survival time in dogs with megaesophagus.
• The median survival time was 90 days with a large number of deaths occurring within the first few days after diagnosis.
• In this study, the prevalence of aspiration pneumonia was 45.1%. The risk of patient death before discharge was 7.69 times higher for dogs with aspiration pneumonia. Dogs older than 13 months when diagnosed had a statistically higher risk of death before hospital discharge.
• Patients with megaesophagus should be monitored for development of aspiration pneumonia as this may affect prognosis.

Vincent Thawley, VMD, University of Pennsylvania
DERMATOLOGY & INTERNAL MEDICINE

Metastatic Calcinosis (Including Calcinosis Cutis) in a Young Dog with Multiple Urinary Tract Abnormalities
Muller A, Degorce-Rubiales F, Guaguère E.
Veterinary Dermatology 2011; 22(3):279-283.

This case report describes a 6-month-old female Brittany spaniel diagnosed with metastatic calcinosis associated with chronic renal failure and multiple congenital urinary tract abnormalities. The dog presented with pruritic skin lesions, poor appetite, polyuria, and polydipsia. Cutaneous lesions consisted of numerous papules and plaques on the muzzle, forehead, legs, and ventral abdomen. Following is a list of diagnostic results:

- Skin cytology suggested pyoderma
- Histopathology revealed calcinosis cutis
- Urinalysis revealed proteinuria, pyuria, hyposthenuria, and crystalluria
- Hematologic and biochemical profiles indicated normochromic normocytic anemia and severe renal failure; serum calcium–phosphorus product was elevated (816 mmol/l)
- Abdominal radiography demonstrated a calcified bladder wall
- Iodine cystography revealed an abnormal image with a cranial diverticulum, strongly suggestive of a patent urachus.

Due to lack of response to diuresis with 0.9% saline infusion and cephalexin treatment as well as a poor prognosis, the dog was euthanized. Necropsy revealed severe bilateral hydronephrosis, bilateral megaureters, and patent urachus. The bladder wall was grossly thickened, firm, and calcified. Histopathology revealed calcium deposits within the bladder wall and kidneys.

Sandra Koch, DVM, MS, Diplomate ACVD, University of Minnesota

Critical Points
- This case highlights the importance of skin as an indicator of systemic disease.
- Chronic renal failure is the most frequent cause of metastatic calcinosis in dogs.
- Definitive diagnosis of calcinosis cutis requires histopathology of cutaneous lesions.
- Complete blood count, serum biochemical profile, and urinalysis are indicated when cutaneous calcinosis is identified.
- The likelihood of metastatic calcification increases when the serum calcium–phosphorus product concentration exceeds 560 mmol/L.

TOXICOLOGY

Safety and Efficacy of High-Dose Fomepizole Compared with Ethanol as Therapy for Ethylene Glycol Intoxication in Cats
Connally HE, Thrall MA, Hamar DW.

This study assessed the safety and efficacy of high-dose fomepizole compared with ethanol (EtOH) in cats for treatment of ethylene glycol (EG) toxicosis. Initially, 2 healthy cats were treated with high-dose IV fomepizole (100 and 150 mg/kg, respectively). These cats experienced no biochemical evidence of toxicity; only mild sedation. Subsequently, 6 cats received lethal doses of EG and were then treated with fomepizole (n = 3; 125 mg/kg IV, followed by 31.3 mg/kg IV at 12, 24, and 36 H after initial dose) or with EtOH (n = 3; 5 mL 20% EtOH/kg IV Q 6 H for 5 treatments; then every 8 H for 4 more treatments). Both the fomepizole and EtOH treatment were started 3 hours after EG ingestion. All 3 cats treated with fomepizole survived, although 1 cat did develop transient acute renal failure (ARF). Only 1 of 3 cats treated with EtOH survived; the other 2 developed severe ARF and were euthanized. These results suggest fomepizole is safe when administered to cats in high doses and that high-dose fomepizole is more effective than EtOH when treating EG toxicosis in cats when treatment is initiated within 3 hours of EG ingestion.

Greg Grauer, DVM, MS, Diplomate ACVIM (Small Animal Internal Medicine), Kansas State University

Critical Points
- The safety and efficacy of high-dose fomepizole versus EtOH for treatment of EG toxicosis in cats was evaluated in this study.
- Six cats were split into 2 groups: 3 received high-dose fomepizole and 3 received EtOH within 3 hours after receiving lethal doses of EG.
- Of the 3 cats that received high-dose fomepizole, all survived; however, 1 developed transient ARF. Of the 3 that received EtOH, only 1 cat survived; 2 developed severe ARF and were euthanized.
- This study suggests that fomepizole is safe when administered in high doses and also more effective than EtOH for treatment of EG toxicosis.
OPHTHALMOLOGY

Results of Retinal Reattachment Surgery in Dogs: 151 Cases (189 Eyes)
Nadelstein B.

Complete retinal detachment occurs in certain situations in small animals and results in blindness. Common causes of massive retinal detachments in dogs include breed predisposition, such as the shih tzu, bichon frise, and Boston terrier, and postcataract surgery in some of those same breeds and others. Although retinal surgery is performed frequently in human patients, retinal re-attachment surgery is a rather new endeavor in veterinary medicine, performed by a limited number of veterinary ophthalmologists. This article reviewed the success rate of the first 189 cases of retinal re-attachment surgery and found that 99% of eyes achieved anatomic success and 73% regained vision. Mean follow-up time was 272 days with 86% retaining vision at the latest follow-up time point. Maximum follow-up time point with retained vision was 3 years. The author concluded that retinal re-attachment surgery for giant retinal tears was a viable option.

Ken Abrams, DVM, Diplomate ACVO, Veterinary Ophthalmology Services, Inc, Warwick, Rhode Island

Critical Points
• Complete retinal detachment is commonly caused by breed predisposition and postcataract surgery.
• Retinal re-attachment surgery, although performed frequently in humans, is a rather new treatment for small animals.
• One hundred eighty-nine cases of retinal re-attachment surgery were reviewed; 99% of eyes achieved anatomic success and 73% regained vision.
• At the latest follow-up point, 86% retained vision, allowing the conclusion that retinal re-attachment surgery for giant retinal tears is a viable option.

RESPIRATORY MEDICINE

Subclinical Airway Inflammation Despite High-Dose Oral Corticosteroid Therapy in Cats with Lower Airway Disease
Cocayne CG, Reiner Cr, DeClue AE.

Feline lower airway disease (LAD), including asthma and chronic bronchitis (CB), is a common cause of cough, wheeze, and respiratory distress in cats. Treatment for LAD relies on glucocorticoids to reduce airway inflammation, with response assessed by resolution of clinical signs.

This retrospective study was designed to evaluate the correlation between resolution of clinical signs and resolution of airway inflammation in cats with LAD receiving glucocorticoids. Ten cats with LAD received daily, high-dose (~2 mg/kg/day) oral glucocorticoids for a minimum of 3 weeks, with complete resolution of clinical signs at recheck. Only 3 of the 10 cats with resolution of clinical signs also had resolution of airway inflammation (determined by bronchoalveolar lavage [BAL]); the remaining 7 cats had persistent airway inflammation despite clinical remission.

This identification of subclinical airway inflammation in the majority of cats is concerning, since chronic inflammation likely results in airway remodeling and predisposes them to recurrent exacerbations of LAD. It is not known why corticosteroids reduced clinical signs without reducing inflammation. While this study has significant limitations (low number of cats, no standardized treatment or recheck protocol, and failure to rule out heartworm disease and lungworm infestation in all cats), it is nonetheless thought provoking. The authors suggest that we should revisit the current recommendation to taper glucocorticoids based on resolution of clinical signs; however, unfortunately BAL fluid (BALF) cytology is not necessarily a practical monitoring tool. The authors propose that future studies should address the need for less invasive methods to diagnose airway inflammation.

Claire R. Sharp, BSc, BVMS (Hons), MS, Diplomate ACVECC, Tufts University

Critical Points
• In this study LAD was diagnosed on the basis of consistent history, thoracic radiographs, BALF cytology, and no evidence of infection.
• Asthma was defined by the presence of airway eosinophilia (>17% eosinophils on BALF cytology)
• CB was characterized by predominantly neutrophilic inflammation (>7% neutrophils)
• Most cats had persistent airway inflammation despite resolution of clinical signs.
• Ideal management involves maintaining high-dose glucocorticoid therapy until both clinical signs and airway inflammation are controlled.
ISFM and AAFP Consensus Guidelines: Long-Term Use of NSAIDs in Cats

Nonsteroidal anti-inflammatory drugs (NSAIDs) provide not only analgesic but also anti-inflammatory and antipyretic effects, making them very desirable therapeutic agents. Unfortunately, there is a negative perception regarding safe use of NSAIDs in cats. This review summarizes the body of literature on this class of drugs through July 2010. The guidelines focus on long-term use in degenerative joint disease but also alludes to their short-term use for the alleviation of acute and peri-operative pain.

Recommendations are made regarding dosing frequency, accuracy, and switching among NSAIDs. There are also practical guidelines for use in cats with pre-existing renal, cardiovascular, gastrointestinal (GI), or hepatobiliary diseases. Screening before use is recommended, in particular a thorough history (including concurrent drug therapy), comprehensive physical examination, blood pressure evaluation, blood analysis (complete blood count and serum biochemical profile), and urinalysis. The panel also recommended that when NSAIDs are used in patients at risk of developing adverse drug events, efforts should be made to use the lowest effective dose and increased monitoring should be performed.

Margie Scherk, DVM, Diplomate ABVP (Feline Practice), CatsINK, Vancouver, British Columbia, Canada

Critical Points
- A client education brochure, catvets.com/uploads/PDF/NSAIDsClient Handout.pdf, can be downloaded from the American Association of Feline Practitioners website (make sure to put space a between “Client” and “Handout”).
- Ensure that the patient is hydrated and that NSAIDs are administered with food.
- In many cases, NSAIDs are most effective when used in conjunction with other treatment modalities.
- Boehringer Ingelheim (Boehringer-Ingeheim.com) has added boxed warning labels to Metacam Solution for Injection and Metacam Oral Suspension. The new instructions for use should be referred to prior to administration of meloxicam (Metacam) (see fda.gov/AnimalVeterinary/NewsEvents/CVMUpdates/ucm231254.htm).

Send Us Your Commentaries & Requests for Journal Club
Would you like to provide a commentary on an article you’ve recently read? Or have a veterinary specialist comment on it instead? If so, email ksoldavin@todaysveterinarypractice.com for guidelines on how to submit your commentary or request to Today’s Veterinary Practice.