# GI Bleeding: Working Through the Rule Outs

Alyssa M. Sullivant, DVM, MS, DACVIM

# Detecting GI Bleeding

- Melena
- Hematochezia
- Hemoptysis

# More on Melena….

Dark, tarry stool caused by upper (usually) GI bleeding

Takes at least 50-200 ml of bleeding to show up as melena

What this means…

- GI bleeding may be present without melena
  - Keep it on the differential list
- If there IS melena, the bleeding is considerable and rapid

# Detecting GI Bleeding

- Increased BUN
- Anemia
  - Regenerative or Non-regenerative
- Hypoalbuminemia
- Mucosal defect on u/s

# Maybe

PAPER

# Clinical findings and results of diagnostic imaging in 82 dogs with gastrointestinal ulceration

E. Fitzgerald[1], D. Barfield, K. C. L. Lee and C. R. Lamb

Department of Clinical Science and Services, The Royal Veterinary College, University of London, North Mymms, Hertfordshire, AL9 7TA, UK

# ULTRASONOGRAPHIC FINDINGS IN DOGS AND CATS WITH GASTROINTESTINAL PERFORATION

SØREN R. BOYSEN, DVM, AMY S. TIDWELL, DVM, DOMINIQUE G. PENNINCK, DVM, DVSc

**A retrospective study was performed to evaluate the sonographic features of gastrointestinal (GI) perforation in dogs and cats. Sonographic findings in 19 animals (14 dogs and 5 cats) included regional bright mesenteric fat (19), peritoneal effusion (16), fluid-filled stomach or intestines (12), GI wall thickening (11), presence of free air (9), loss of GI wall layering (9), regional lymphadenopathy (8), reduced GI motility (7), pancreatic changes (4), corrugated intestines (4), presence of a mass (3), presence of a foreign body (3), and mineralization of the gastric wall (1). In 14 patients, "perforation" was listed as a differential diagnosis by the sonographer. Abdominal radiographs and radiographic reports were available for 14 patients. Radiographic findings were decreased serosal detail (12), free air (8), peritoneal contrast medium (1), and suspected foreign body (1). GI perforation was listed as radiographic diagnosis in eight patients, seven of which had evidence of pneumoperitoneum, and one had leakage of contrast material on an upper GI study. In 9/14 patients with radiography, "GI perforation" was listed as a sonographic diagnosis. In three patients in which free air was diagnosed sonographically, radiographs were either not available (2) or the presence of free air was not detected at presentation (1). Peritoneal fluid analysis was performed in nine patients, five of which were identified as septic inflammation, and the remaining four were classified as neutrophilic inflammation with no etiologic agent identified. The histologic or surgical diagnoses were as follows: three intestinal surgical dehiscence; one percutaneous endoscopic gastrostomy tube site leakage; one duodenal adenocarcinoma; one ileocolic lymphoma; one trichobezoar; one ascarid impaction; and one bobby pin foreign body. In the remaining 10 patients, a focal area of gastric/intestinal ulceration or transmural necrosis with perforation was identified without evidence of an underlying cause.** *Veterinary Radiology & Ultrasound, Vol. 44, No. 5, 2003, pp 556–564.*

# Detecting GI Bleeding

Fecal Occult Blood

Original Article

# Pilot study of the effect of gastrointestinal diets on fecal occult blood testing in cats

Kate E Spies[1] and Jennifer E Slovak[2]

# Causes: Inflammatory

- Ulceration
- Foreign body
- Inflammatory Bowel Disease
- Severe gastritis
  - Including parasitism
- Severe pancreatitis
- Uremic gastroenteritis
- Hepatic disease, especially with portal hypertension
- Anaphylaxis

# Causes: Infectious

- Histoplasmosis
- GI parasites
- Helicobacter
- Toxoplasmosis
- Pythium

# IBD

NOT a common cause of GI bleeding

*J Vet Intern Med* 2014;28:827–837

# Relationship among Serum Creatinine, Serum Gastrin, Calcium-phosphorus Product, and Uremic Gastropathy in Cats with Chronic Kidney Disease

S.M. McLeland, K.F. Lunn, C.G. Duncan, K.R. Refsal, and J.M. Quimby

# Drug-induced GI Bleeding: NSAIDS

- A very, very common cause of GI bleeding in dogs
  - Well-documented

STANDARD ARTICLE

Journal of Veterinary Internal Medicine Open Access

ACVIM American College of Veterinary Internal Medicine

# Prevalence of gastrointestinal lesions in dogs chronically treated with nonsteroidal anti-inflammatory drugs

Kasey Mabry[1] | Tracy Hill[2] | Mary Katherine Tolbert[3]

**Results:** Twelve dogs receiving NSAIDs and 11 retrospectively evaluated control dogs were included. The NSAIDs administered included carprofen (9 dogs), meloxicam (2 dogs), and firocoxib (1 dog) for a median of 6 months. Ten (83.3%; 95% confidence interval; 51.6%-97.9%) NSAID-treated dogs had GI erosions. Erosions were seen with all 3 NSAIDs in at least 1 dog. Three of 11 control dogs had gastric erosions. Dogs receiving NSAIDs had more erosions detected ($P$ = .004).

# Retrospective evaluation of the incidence of gastrointestinal bleeding in dogs receiving ophthalmic nonsteroidal anti-inflammatory drugs

Laura R. Van Vertloo[1] | Hannah M. Terhaar[2] | Austin K. Viall[3] | Rachel A. Allbaugh[1]

JOURNAL OF
Veterinary Emergency
AND Critical Care

**Case Report**

*Journal of Veterinary Emergency and Critical Care* **27**(6) 2017, pp 707–712
doi: 10.1111/vec.12638

# Topical flurbiprofen toxicosis in a cat

Elizabeth M. Yi, DVM and Elizabeth Leech, MVB, MRCVS, DACVECC

# Drug-induced GI Bleeding: Steroids

Well documented in dogs

STANDARD ARTICLE

Journal of Veterinary Internal Medicine Open Access

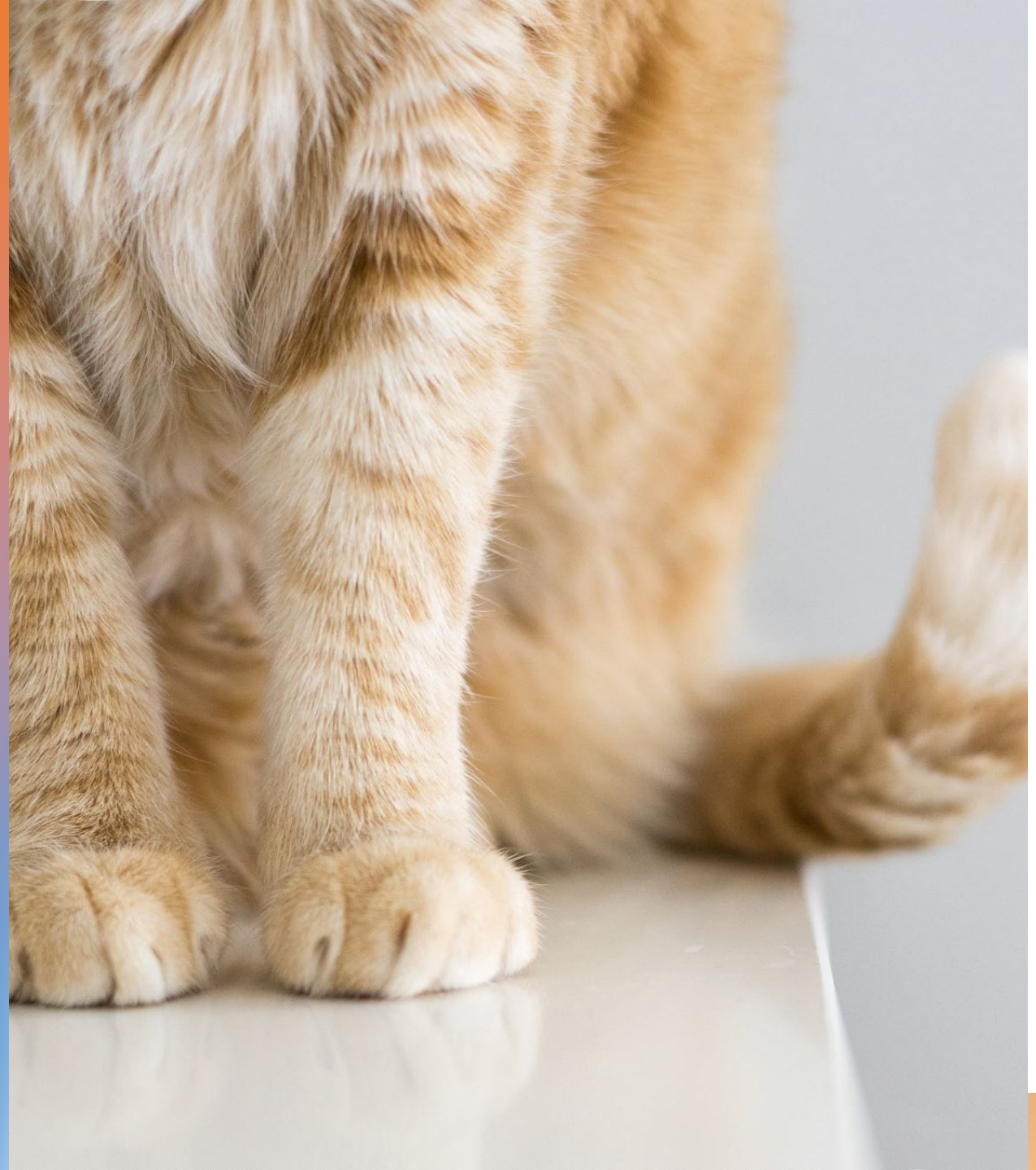
ACVIM American College of Veterinary Internal Medicine

## Clinicopathologic and gastrointestinal effects of administration of prednisone, prednisone with omeprazole, or prednisone with probiotics to dogs: A double-blind randomized trial

Mariola B. Rak[1] | Tamberlyn D. Moyers[1] | Joshua M. Price[2] | Jacqueline C. Whittemore[1]

# Neoplasia: The Most Common Cause of GI Bleeding In Cats

- GI lymphoma
- Mast cell neoplasia
- Carcinoma
- Leiomyosarcoma
- Leiomyoma
- Gastrinoma



# A Word About MCT in Cats

- Visceral > cutaneous
  - Spleen, intestinal
- Cats rarely have circulating mast cells, so check a buffy coat

# Trauma/Shock/Severe Stress

# What Do We KNOW in Cats?

CASE REPORT

## Gastroduodenal ulceration in cats: eight cases and a review of the literature

JM Liptak†, GB Hunt‡, VRD Barrs, SF Foster, PLC Tisdall, CR O'Brien, R Malik

**Table 1.** Summary of cats with gastroduodenal ulcers seen at the University Veterinary Centre Sydney from 1998 to 2001

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Breed | DSH | Manx cross | Abyssinian | DSH | DSH | DSH | DSH | Chinchilla |
| Age (years) | 2 | 11 | 0.6 | 10 | 14 | 7 | 13 | 12 |
| Sex | MN | MN | MN | FS | FS | FS | FS | FS |
| Duration (weeks) | 0.86 | 1.3 | 0.07 | 8 | 52 | 3 | 0.14 | 35 |
| Vomiting | Y | Y | Y | Y | Y | Y | | Y |
| Haematemesis | | | | Y | | Y | | |
| Melaena | Y | | | | | Y | | Y |
| Inappetence | | | Y | | Y | Y | Y | Y |
| Weight loss | | | | Y | Y | Y | Y | Y |
| Polydipsia | Y | | | | Y | | | Y |
| Abdominal pain | | Y | Y | | | | | Y |
| Anaemia | Y | Y | Y | Y | Y | Y | Y | Y |
| Hypoproteinaemia | | | | Y | Y | Y | | |
| Lymphopaenia | | | | | | Y | Y | Y |
| Neutrophilia | | Y | Y | Y | | Y | | Y |
| Left shift | | | Y | Y | | | | |
| Hypokalaemia | Y | Y | | Y | | | | |
| Ulcer location | Pylorus (1) | Pylorus (3) | Fundus (1)<br>Pylorus (1) | Pylorus (1)<br>Duodenum (2) | Duodenum (1) | Fundus (NR)<br>Pylorus (NR) | Pylorus (NR) | Fundus (1) |
| Perforated | | | Y | Y | Y | | | |
| Treatment | Suture | None/Died | Suture | Suture | Suture | Billroth I | Billroth I | Euthanasia |
| Cause | Unknown | Unknown | Unknown | Gastrinoma | Pancreatic AC | Gastric LSA | Gastric LSA | Gastric AC |
| Survival (months) | >16 | 0 | >30 | 18 | 12 | >20 | >13 | 0 |

DSH, domestic short hair; MN, male neuter; FS, female spayed; Y, yes; AC, adenocarcinoma; LSA, lymphosarcoma; NR, not recorded.

**Table 4.** Summary of signalment, presenting signs, physical examination and laboratory findings, and ulcer characteristics in cats with gastroduodenal ulcers from the University Veterinary Centre Sydney and literature review

| | Tumour UVCS | Non-tumour UVCS | Tumour review | Non-tumour review | Tumour total | Non-tumour total | Total |
|---|---|---|---|---|---|---|---|
| Breed | 80% DSH (4/5) | 33% DSH (1/3) | 60% DSH (3/5) | 83% DSH (5/6) | 70% DSH (7/10) | 67% DSH (6/9) | 68% DSH (13/19) |
| Age (years) | 11.2 | 4.5 | 9.7 | 9.1 | 10.4 | 7.2 | 9.1 |
| Sex | 100% F/FS (5/5) | 0% F/FS (0/3) | 50% F/FS (3/6) | 60% F/FS (3/5) | 73% F/FS (8/11) | 38% F/FS (3/8) | 58% F/FS (11/19) |
| Duration (weeks) | 19.6 | 0.7 | 25.4 | 1.5 | 22.5 | 1.3 | 12.4 |
| Vomiting | 80% (4/5) | 100% (3/3) | 100% (5/5) | 29% (2/7) | 90% (9/10) | 50% (5/10) | 70% (14/20) |
| Haematemesis | 40% (2/5) | 0% (0/3) | 25% (1/4) | 17% (1/6) | 33% (3/9) | 11% (1/9) | 22% (4/18) |
| Melena | 40% (2/5) | 33% (1/3) | 0% (0/4) | 33% (2/6) | 22% (2/9) | 33% (3/9) | 28% (5/18) |
| Inappetence | 80% (4/5) | 33% (1/3) | 60% (3/5) | 60% (3/5) | 70% (7/10) | 50% (4/8) | 61% (11/18) |
| Weight loss | 100% (5/5) | 0% (0/3) | 100% (4/4) | 29% (2/7) | 100% (9/9) | 20% (2/10) | 58% (11/19) |
| Polydipsia | 40% (2/5) | 33% (1/3) | 0% (0/4) | 0% (0/7) | 22% (2/9) | 10% (1/10) | 16% (3/19) |
| Abdominal pain | 20% (1/5) | 67% (2/3) | 0% (0/3) | 29% (2/7) | 13% (1/8) | 40% (4/10) | 28% (5/18) |
| Anaemia | 100% (5/5) | 100% (3/3) | 50% (2/4) | 40% (2/5) | 78% (7/9) | 63% (5/8) | 71% (12/17) |
| Hypoproteinaemia | 60% (3/5) | 0% (0/3) | 0% (0/4) | 40% (2/5) | 33% (3/9) | 25% (2/8) | 29% (5/17) |
| Lymphopaenia | 60% (3/5) | 0% (0/3) | 0% (0/4) | 40% (2/5) | 33% (3/9) | 25% (2/8) | 29% (5/17) |
| Neutrophilia | 60% (3/5) | 67% (2/3) | 25% (1/4) | 20% (1/5) | 44% (4/9) | 38% (3/8) | 41% (7/17) |
| Left shift | 20% (1/5) | 33% (1/3) | 25% (1/4) | 40% (2/5) | 22% (2/9) | 38% (3/8) | 29% (5/17) |
| Hypokalaemia | 20% (1/5) | 67% (2/3) | 0% (0/4) | 20% (1/5) | 11% (1/9) | 38% (3/8) | 24% (4/17) |
| Renal failure | 0% (0/5) | 0% (0/3) | 0% (0/3) | 0% (0/5) | 0% (0/8) | 0% (0/8) | 0% (0/16) |
| Hepatic failure | 0% (0/5) | 0% (0/3) | 0% (0/3) | 0% (0/5) | 0% (0/8) | 0% (0/8) | 0% (0/16) |
| Ulcer location | 30% Fundus<br>40% Pylorus<br>30% Duodenum | 17% Fundus<br>83% Pylorus<br>0% Duodenum | 17% Fundus<br>0% Pylorus<br>83% Duodenum | 69% Fundus<br>19% Pylorus<br>13% Duodenum | 23% Fundus<br>18% Pylorus<br>59% Duodenum | 54% Fundus<br>36% Pylorus<br>9% Duodenum | 39% Fundus<br>27% Pylorus<br>34% Duodenum |
| Perforated | 40% (2/5) | 33% (1/3) | 50% (2/4) | 44% (4/9) | 44% (4/9) | 42% (5/12) | 43% (9/21) |
| Survival (months) | 12.2 | 14.7 | 6.8 | 2.3 | 9.2 | 6.4 | 8.0 |

UVCS, University Veterinary Centre Sydney; DSH, domestic short hair; F, female; FS, female spayed.

# What Do We KNOW in Cats?

Original Article

*Journal of Feline Medicine and Surgery*
2015, Vol. 17(10) 873–879
© ISFM and AAFP 2014
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/1098612X14558894
jfms.com
SAGE

## Spontaneous gastrointestinal perforation in cats: a retrospective study of 13 cases

**Fanny Bernardin, Laura Martinez Rivera, Guillaume Ragetly, Eymeric Gomes and Juan Hernandez**

# 4/13 had ulceration

**Table 1** Clinical signs in the 13 cats

| Clinical sign | n |
|---|---|
| Anorexia or decreased appetite | 11 |
| Vomiting | 8 |
| Lethargy | 7 |
| Weight loss | 5 |
| Dehydration | 5 |
| Abdominal distension | 4 |
| Hyperthermia | 3 |
| Abdominal pain | 3 |
| Dyspnoea | 2 |
| Pallor | 2 |
| Melaena | 1 |
| Icterus | 1 |

| Case number | Age (years) | Previous treatment | Concomitant disease | FIV/FeLV | Tests undertaken prior to surgery | Histological examination | Perforation localisation | Chemotherapy | Survival time (days) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | Maropitant, metronidazole, cimetidine | Pancreatitis, upper respiratory tract disease | Negative | Ultrasonographical examination: suspicion of duodenal tumour and perforation | High-grade lymphoma | Duodenum | Chlorambucil, prednisolone | 93 |
| 2 | 9 | Meloxicam | None | Unknown | Ultrasonographical examination: suspicion of jejunal tumour and perforation | High-grade lymphoma | Jejunum | Chlorambucil, prednisolone | 58 |
| 3 | 17 | Maropitant, cimetidine, sucralfate, benazepril, enrofloxacin | CKD, HCM | Unknown | Radiography: pneumoperitoneum, gastric ileus. Ultrasonographical examination: suspicion of gastric perforation | Chronic hyperplasic gastritis | Stomach (lesser and greater curvature) | NP | Unknown |
| 4 | 0.75 | Amoxicillin, metronidazole | Upper respiratory tract disease | Negative | Radiography: pneumoperitoneum | Chronic suppurative ulcerative enteritis | Stomach (lesser curvature) | NP | Unknown |
| 5 | 11 | Enrofloxacin, metronidazole, prednisolone | None | Negative | Radiography: no sign of perforation. Ultrasonographical examination: pneumoperitoneum, suspicion of pyloroduodenal perforation | High-grade lymphoma | Stomach (pyloric antrum) | L-asparaginase, prednisolone, vincristine | >955 |
| 6 | 0.83 | Griseofulvin, prednisolone, metoclopramide, ranitidine | Upper respiratory tract disease, dermatophytosis | Negative | Ultrasonographical examination: pneumoperitoneum, suspicion of duodenal perforation | NP | Duodenum | NP | 2 |
| 7 | 10 | None | None | Negative | Radiography: pneumoperitoneum, generalised ileus. Ultrasonographical examination: generalised ileus. Abdominocentesis | Low-grade lymphoma | Stomach (pyloric antrum) | Chlorambucil, prednisolone | 83 |
| 8 | 3 | Amoxicillin, gentamicin, dexamethasone | None | Unknown | Abdominocentesis | High-grade lymphoma | Duodenum | NP | 12 |
| 9 | 5 | Marbofloxacin, cefalexin, meloxicam | None | Negative | Ultrasonographical examination: pneumoperitoneum, suspicion of gastric perforation. Abdominocentesis | Chronic lymphocytic–plasmacytic ulcerative enteritis | Stomach (pyloric antrum) | NP | 1 |
| 10 | 7 | None | None | Unknown | Ultrasonographical examination: suspicion of duodenal perforation | Chronic lymphocytic–plasmacytic ulcerative enteritis | Duodenum | NP | Unknown |
| 11 | 8 | Cimetidine, prednisolone | Hyperthyroidism | Unknown | Ultrasonographical examination: suspicion of jejunal tumour and perforation | Low-grade lymphoma | Jejunum | Chlorambucil, prednisolone | 146 |
| 12 | 9 | None | None | Unknown | Radiography: pneumoperitoneum | NP | Stomach (lesser curvature) | NP | 2 |
| 13 | 5 | None | None | Negative | Radiography: gastric ileus. Ultrasonographical examination: gastric ileus | Chronic suppurative ulcerative enteritis | Jejunum | NP | >835 |

# Other Random Causes

- Hydrogen Peroxide
- Swallowing blood
  - Oral tumor
  - Nasal tumor
  - Dental disease
- Foreign body
- Hypoadrenocorticism
- Coagulopathy
  - Congenital vs acquired

# Thank you!

amsullivant@cvm.msstate.edu