Chronic Vomiting in Cats

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Is a vomiting cat normal?

- At my house – maybe? Or maybe I should attend my own lecture.
- Cats do tend to vomit more readily than dogs
  - Hairballs
  - I ate too fast
  - I ate too slow
  - I didn’t eat
  - I ate too much
- But is this really normal?
But it’s just a hairball!!

- Some longer haired cats may truly just consume too much hair when grooming
- Or.....
  - Skin disease
  - Food allergies
  - Intestinal disease
  - Motility disorders
  - Behavioural abnormalities

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Categories of Causes

Primary GI Causes
- Parasitic or Infectious Disease
- Neoplasia
- Inflammatory disease/Food allergy
- Intestinal dysbiosis
- Gastric ulceration/erosion
- Motility disturbances
- Gastric outflow obstruction
Categories of Causes

Extra-GI Causes
- Pancreatic disease
- Hepatic disease
- Endocrine disease
- Systemic infectious disease
- Neoplasia
- Parasitic lung/vascular disease
- Acute/chronic renal disease
- CNS disease
Initial Diagnostic Steps

- Detailed history and physical examination
  - When does vomiting occur?
  - What does it look like and does this vary?
  - Is there ever blood present?
  - Has there been any recent changes in diet, feeding routine, household, new pets, new plants?
  - Is there weight loss? Diarrhea? Straining to defecate?
  - Changes in energy levels?
  - Changes in drinking/urination?
Initial Diagnostic Steps

- CBC, biochemical profile and urinalysis
- Total T₄
- Fecal examination
- fPL or similar
- +/- TLI, cobalamin, folate
- +/- Heartworm test, FeLV/FIV testing
- FIP testing???
Imaging

- Abdominal radiographs
  - Suspicious of foreign body
- Abdominal ultrasound
  - Gastrointestinal disease
  - Hepatic disease
  - Pancreatic disease
  - +/- Renal disease
  - Abdominal neoplasia
How Useful is Ultrasound?

- Assessment of gastrointestinal tract
  - Stomach, intestine, ILEUM, cecum, colon
  - Gastrointestinal masses
  - Associated lymphadenopathy
  - Thickness of gastrointestinal wall (stomach, areas of small intestine including ileum, colon)
  - Thickening of muscularis propria
  - Irregularity, change in echotexture, change in layering
  - Possibly assess motility – peristalsis, presence of gastric food after prolonged fasting
How Useful is Ultrasound?

Normal SI

Thickening of muscularis propria
How Useful is Ultrasound?

- Assessment for abdominal neoplasia
  - Discrete or multifocal masses
  - Lymphadenopathy
- Assessment of pancreas
  - Enlargement, change in echotexture, irregularity
  - Nodules, masses, cystic structures
- Assessment of liver
  - Size, echotexture, assessment of gall bladder
How Useful is Ultrasound?

Normal Pancreas

Chronic Nodular Pancreatitis
Next steps

- Symptomatic treatment
  - Antiemetic
  - Gastroprotectant
  - Diet change
  - Laxative/Hairball remedy

- Endoscopy and biopsy
  - Imperative to get duodenal samples, ideally get ileal samples

- Exploratory laparotomy and biopsy
  - Sample the GI tract, pancreas, liver, LN
Next steps

- Make sure you have ruled out some other causes:
  - Hyperthyroidism
  - Renal Disease
  - Parasitism
  - Foreign Body
  - CNS disease
Endoscopy

- Assess the oral cavity, esophagus, stomach, and duodenum
- Ideally perform a lower GI endoscopy to evaluate the colon and obtain ileal biopsies
- If endoscopy is visually normal (which is often is), obtain at least 12 samples from each site
- If endoscopy is not visually normal, obtain at least 12 samples from each normal site, and also samples of abnormal area (submit in separate formalin jar)
Assess the entire gastrointestinal tract, liver, pancreas, lymph nodes

Biopsies of all of these areas, aerobic and anaerobic cultures of liver, gall bladder

Consider the status of the patient
- Geriatric cats, consider preoperative IV fluid therapy
- May take longer to recover than the average patient
Pros and Cons - Endoscopy

- Minimally invasive, especially in geriatric vomiting cats with co-morbidities
- Reduced cost to owners
- Can start therapy right after procedure and biopsy results (steroid therapy, chemotherapy)
- Do not obtain samples of jejunum
- Do not obtain samples of LN, liver, pancreas (assess for triaditis)
Pros and Cons - Surgery

- Can obtain samples of jejunum
- Can obtain samples of LN, liver, pancreas
- More invasive, especially in geriatric vomiting cats with co-morbidities
- Increased cost to owners
- Cannot start therapy right after procedure and biopsy results (steroid therapy, chemotherapy)
- Laparoscopy can also be considered
What if I have normal biopsies?

- Causes of chronic vomiting with normal biopsies
  - Intestinal dysbiosis
  - Dietary intolerance
  - Chronic idiopathic vomiting (but did we miss the cause?)
  - Patchy disease (IBD, neoplasia, etc)
  - Undiagnosed systemic disease
Lymphocytic IBD versus small cell lymphoma

- Recent study - 2016 JSAP
- Findings suggest that if histologic diagnosis is lymphoma, no further testing needed
- Many cases with histologic diagnosis of IBD actually have early small cell lymphoma
- PARR (clonality) testing in all diagnosed IBD cases?
- Even PARR can have false negatives
Main Disease Processes

- Inflammatory Bowel Disease/Food Allergy
- Small Cell Lymphoma
- Chronic Pancreatitis/Cholangitis

Age Dependent Disease Processes

- Foreign Body
- Infectious (Parasites, FIP, etc)
- Neoplasia
Inflammatory Bowel Disease

- Different types classified by main inflammatory cell present
  - Lymphocytic-plasmacytic
  - Eosinophilic
  - Pyogranulomatous
- Main causes
  - Genetic susceptibility
  - Intestinal microbial dysbiosis
  - Food allergy
Inflammatory Bowel Disease

- Therapy varies but usually includes one or all of:
  - Dietary modification
  - Anti-bacterial treatment
  - Immunosuppressive therapy
  - Vitamin B$_{12}$ supplementation or monitoring
  - Probiotic/fecal biotherapy
- Minimal objective data on efficacy
- Staged approach recommended
Lymphocytic-plasmacytic IBD

- Most common type
- Typically start with dietary modification
- Some cases managed long term with diet +/- symptomatic therapy (Cerenia, famotidine etc)
- Severe, non-responsive or hypoproteinemic cases will require immunosuppression
  - Prednisone/prednisolone (and vitamin B₁₂)
  - +/- Cyclosporine, Chlorambucil
- Some difficult to differentiate from lymphoma
What to do with LP-IBD Dx

- Recommend PARR clonality testing
- Consider symptoms and signalment (is there weight loss, is the cat older)
- Consider pre-biopsy use of steroids
- Consider degree of inflammation and mucosal disruption
- Use a pathologist that you trust
- Consider prednisolone and chlorambucil in severe LP-IBD cases
Eosinophilic IBD

- Second most common type
- Rule out parasitism, hypoadrenocorticism
- Most <5 years age
- More common in dogs
- Mucosal erosion and ulceration
- More likely to present with hematemesis, melena and/or hematochezia
Eosinophilic IBD

- More likely to require multimodal therapy
- Prophylactic deworming in all cases
- Mild cases can try dietary modification alone
- Some cases managed long term with diet +/- (Cerenia, famotidine etc)
- Most cases will require immunosuppression
  - Prednisone/prednisolone (and vitamin B$_{12}$)
  - +/- Cyclosporine, Chlorambucil
Pyogranulomatous enteritis

- Feline infectious peritonitis
- Would expect to find other evidence of FIP
  - Granuloma formation
  - Nodules in other organs
  - Ascites
  - Pleural effusion
  - Nodules along peritoneal and/or pleural cavity
  - Nervous system inflammation
Small Cell Lymphoma

- Very common in older cats
- May only see weight loss
- Can have normal ultrasound findings
- Occasional mesenteric lymphadenopathy
- Commonly see thickened muscularis propria
- Occasionally can have SCL in liver, etc
- Diagnose with surgery or endoscopy (ileum!)
Small Cell Lymphoma

- Much different prognosis than large cell LSA
- 75% of cats with gastrointestinal lymphoma have lymphocytic (small cell) lymphoma
- 70-90% response rate for SCL, <20% response rate for large cell lymphoma
- Median survival time (MST) of 2 years for SCL, MST of 2.7 months for large cell LSA
- Treat with prednisolone and chlorambucil
- Rescue with cyclophosphamide
Pancreatitis/Cholangitis

- Any age of cat, either gender
- Underweight, normal weight, overweight
- Lymphoplasmacytic is most common form
- Lethargy, anorexia, and dehydration
- Not linked to getting into garbage, high fat foods, etc
- 66-75% with cholangitis also had pancreatitis
- Possible link to bacterial cholangiohepatitis
Pancreatitis/Cholangitis

- Pancreatitis/cholangitis difficult to diagnose
  - fPL
  - Ultrasound
  - Biopsy (especially cholangitis)

- fPL sensitivity
  - 100% in severe pancreatitis
  - 80% in moderate pancreatitis
  - 65% in mild pancreatitis
  - 25% of normal cats had an elevated fPL
Ultrasound
- 80% sensitivity in moderate to severe pancreatitis
- Less so in mild pancreatitis
- Often normal in cholangitis

Typical changes
- Hypoechoic pancreas or liver, nodules
- Hyperechoic mesentery
- Dilated common bile duct, thickened gall bladder wall
- Normal appearance
Pancreatitis/Cholangitis

- Cholangitis, and intestinal inflammation, commonly occur with pancreatitis (triaditis)

- Typical blood work changes
  - Neutrophilia, mild thrombocytopenia
  - Increased ALT, ALP
  - Increased bilirubin
  - Mild hyperglycemia
  - +/- Hypoalbuminemia
Causes and Diagnosis

- Bacterial (suppurative inflammation) – less common for chronic cases
- Immune-mediated (lymphocytic-plasmacytic inflammation) – most common
- Neoplastic – often small cell lymphoma
- Biopsy required
  - One study indicated only 48% agreement through Tru-cut biopsy and wedge biopsy
  - Higher risk to Tru-cut livers of cats
  - No ability to sample pancreas
Therapy

- Dietary modification
- Anti-bacterial treatment
- Immunosuppressive therapy
- Probiotics/Fecal biotherapy/Vitamin B₁₂
- Antiemetics/Gastroprotection
- Analgesia/Fluids
- Ursodiol
- Antioxidants
- Appetite stimulation
Dietary Therapy

- Fewer carbohydrates
- Highly digestible protein sources
- Can try either Gastrointestinal Diets or Hypoallergenic Diets
- Many choices – Issue of palatability with cats
  - Rayne
  - MCRC
  - Balanced home cooked
  - Purina
  - Iams
  - Hill’s
Which Disease?

- Inflammatory bowel disease
  - Hypoallergenic diet
  - Some cases respond to gastrointestinal diets
- Cholangitis/cholangiohepatitis
  - Gastrointestinal diet?
  - Liver diet not indicated unless failure present
- Chronic pancreatitis
  - ?????????????????????????????????
  - Gastrointestinal diet? Lower fat?
Anti-bacterials

- Broad spectrum for possible bacterial cholangiohepatitis
- Antibacterials for IBD with concurrent diarrhea
  - Metronidazole
    - Antimicrobial and immunomodulatory
  - Tylosin
    - Antimicrobial, may be immunomodulatory
Immunosuppression

- **Glucocorticoids**
  - Most frequently used type
  - Prednisone/prednisolone drug of choice
    - 2 mg/kg q 24 hours x 2-4 weeks, then taper slowly
    - Give with food, and gastroprotection at high dose
  - Main side effect is potential to transition into overt diabetes mellitus in pre-diabetic cats
  - Dexamethasone can also be used (0.25 mg/kg q 24 hours starting dose), and in some cases causes remission in refractory cases
Immunosuppression

- **Budesonide** - Locally acting nonhalogenated corticosteroid
  - High hepatic clearance, resulting in high local and low systemic activity
  - Useful in cases that are very sensitive to prednisone, or contraindications such as diabetes mellitus
  - Highly effective in some cases, other cases have little to no response
  - 0.5 – 1 mg PER CAT q 24-48 hours, usually not tapered
Immunosuppression

- **Chlorambucil**
  - Most commonly used in cats
  - Side effects
    - Vomiting, inappetence, diarrhea, bone marrow suppression
  - Several dosing protocols
    - 2 mg PO q 48 hours (large cats)
    - 2 mg PO Mon/Wed/Fri (small cats)
    - 2 mg PO q72 hours (very small cats)
    - 20 mg/m² every 14 days
  - Monitor CBC
Immunosuppression

- Cyclosporine
  - Induces rapid immunosuppression
  - Side effects in up to 50%
    - Vomiting, inappetence, diarrhea, alopecia, gingival hyperplasia, idiosyncratic hepatopathy, opportunistic infectious disease
  - 5 mg/kg PO q 12-24 hours
  - Expensive
  - Should avoid certain formulations
Vitamin $B_{12}$ (cobalamin)

- Vitamin $B_{12}$ deficiency causes ill-thrift, poor appetite
- Suggestion that having high normal to mildly elevated levels may be beneficial to GI health
- Many dosing protocols
  - We use ~20 ug/kg weekly for 4 weeks, then monthly
- Can otherwise monitor levels
- Less common to have folate deficiency, not usually supplemented
Probiotics

- Live microorganisms that can confer a health benefit when given in sufficient quantity
- Use supported in human/mice studies
  - Newborns in developing countries
  - Antibiotic associated human diarrhea
  - Positive response in human IBD
  - Improved immune response to *Giardia* in mice
- Minimal information on effectiveness for cats
- Can also perform fecal biotherapy
General antiemetics

- Maropitant
  - Antiemetic, reduces visceral pain
  - 1-2 mg/kg q24h PO or SQ, usually 3-5 days but can be given longer if needed
- Ondansetron
  - 0.5-1 mg/kg q12-24h PO or IV
- Metoclopramide
  - Likely less effective in cats
  - 0.2-0.5 mg/kg q8h PO, SQ or IV (CRI)
General GI protection

- Famotidine or ranitidine
  - 0.5 mg/kg q12h PO, IV or SQ, q24h in renal failure
- Omeprazole
  - 1 mg/kg q24h PO
- Sucralfate
  - 2-3 ml total PO q8h
Analgesia/Fluid therapy

- Buprenorphine 0.01-0.03 mg/kg IM, IV, or buccal q6-8h
- Fluid therapy
  - IV if dehydrated, substantial vomiting, pre-anesthesia for endoscopy or surgery
  - SQ if hospitalization not needed
  - Caution in geriatric cats in case of subclinical heart disease
Ursodiol/Antioxidant

● Cholangitis cases
  ● Ursodiol 10-15 mg/kg once daily PO with food. Likely will need to have compounded, may need to gradually increase dose to full amount

● Cholangitis and/or pancreatitis cases
  ● Antioxidant therapy
    ● Zentonil Advanced/Denosyl
    ● Hepatosupport
    ● Vitamin E
Mirtazapine

- Cats with a reduced appetite
  - Mirtazapine 2 mg per CAT PO every other day (once daily if normal kidneys?)
  - Caution if heart disease and hypotension
  - Caution in renal/hepatic cases – recommendations are to monitor parameters while using
Prognosis

- Dependent on cause
- Dependent on response to treatment
- Dependent on owner compliance
- Difficult to monitor improvement in most cases other than through clinical response, unless there were lab work changes present
Questions?