

CHRONIC VOMITING IN DOGS AND CATS: A PRACTICAL DIAGNOSTIC APPROACH

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Chronic vomiting (intermittently or continuously for at least 7 days) in dogs and cats is a common and frustrating problem for clients and veterinarians. Because many diseases cause chronic vomiting, a thorough evaluation must be performed to arrive at an accurate diagnosis. Definitive diagnosis of many diseases requires mucosal biopsy. In the past, exploratory celiotomy was necessary to obtain biopsy specimens. However, the increased availability of flexible fiberoptic endoscopy in veterinary medicine has allowed less invasive tissue biopsy.

The first step in the approach to the chronically vomiting patient is to determine that vomiting and not regurgitation is present. Vomiting is associated with signs of nausea (depression, salivation, frequent swallowing, and vocalization in some cats) that is followed by abdominal contractions prior to the expulsion of material. Regurgitation is associated with esophageal disorders and occurs passively, usually associated with increased intrathoracic pressure that may be caused by excitement, activity, or changes in body position.

Once you have determined vomiting is present the history and physical examination can contain many clues to the etiology. A thorough dietary history should be obtained. In some cases, correcting dietary indiscretion or instituting a highly digestible diet for 3-4 weeks will resolve the vomiting. Dietary indiscretion can be due to a recent diet change, feeding of table scraps, free-roaming behavior allowing ingestion of garbage, ingestion of foreign objects, exposure to toxins (including house plants), excessive ingestion of hair, or feeding a low quality poorly digestible diet. The history may identify the use of drugs, such as NSAIDs, that can cause vomiting due to gastritis or ulceration. The presence of diarrhea or signs of systemic disease may help to rank the rule-out list.

Physical examination may be normal or only demonstrate signs of weight loss. An abdominal mass or dilated loop of small bowel may be identified as a cause of high partial small bowel obstruction. If vomiting has recently become more frequent, signs of dehydration may be present (delayed capillary refill time, enophthalmos, decreased skin turgor, tachycardia, pale mucous membranes, and cold extremities). Signs suggesting systemic disease include: polyuria / polydipsia, polyphagia, hepatomegaly, cataract formation, icterus, encephalopathy, ascites, pyrexia, bradycardia, tachycardia, small irregular kidneys, oral ulceration, pale mucous membranes, splenomegaly, or an abdominal mass.

Table 1 lists some causes of chronic vomiting in dogs and cats. Systemic diseases can usually be ruled out by a thorough history, careful physical examination and routine laboratory tests (complete blood count, biochemical profile, urinalysis, amylase, lipase, and cPLI, heartworm antibody test, and T4). Correction of dietary indiscretion or a 3-4

week trial with a highly digestible diet should be performed before more invasive testing. Gastrointestinal causes of chronic vomiting may involve either the stomach or oral small intestine. An efficient plan to evaluate gastrointestinal causes includes fecal examination for parasites, survey abdominal radiography, and endoscopic examination with mucosal biopsy. If endoscopy is not available, a barium contrast upper GI series and exploratory laparotomy can be used (Table 2). Although helpful in some cases, the diagnostic utility of abdominal ultrasound has not yet been fully determined. Abnormalities that can be detected include thickened stomach or small bowel, gastric, small bowel or pancreatic mass, enlarged regional lymph nodes, enlarged hypoechoic pancreas, dilated small bowel, abnormal gastric or small bowel motility, or evidence of an intraluminal foreign body.

Survey abdominal radiographs rarely establish a cause for chronic vomiting (unless a radiodense foreign body is seen) and a barium upper GI series is usually indicated. Advantages of contrast radiography versus endoscopy and laparotomy include the following: 1) available in all practices, 2) noninvasive, 3) does not require general anesthesia, 4) always visualizes the duodenum, 5) evaluates gastric size and position, 6) provides a qualitative description of gastric motility and emptying of liquids, and 7) detects extraluminal and submucosal / muscular masses. A barium series is time consuming to perform, costly to the client, and is a source of radiation exposure to the hospital staff. If lesions are identified, tissue biopsy is needed to confirm a diagnosis. If a foreign body is detected, it must be removed via endoscopy or exploratory laparotomy. The upper GI series is insensitive for mucosal lesions. Abdominal ultrasonography has recently been added to the diagnostic plan for many dogs and cats with chronic vomiting. It has been shown to be very helpful in animals with a mass lesion, especially neoplasia. An ultrasound guided fine needle aspirate or trucut biopsy can be performed. Ultrasound has also been shown to be helpful in cases with chronic pancreatitis. Other advantages of ultrasound include: being noninvasive, imaging of the liver and biliary system, imaging of the small and large bowel and mesenteric lymph nodes, and assessment of the layers of the GI tract and its motility. Disadvantages include the need for expensive equipment and specialized training, interference by gas within the GI tract, and difficulty in imaging the pancreas. In a group of dogs with chronic vomiting, the following factors were associated with a high diagnostic utility of abdominal ultrasound: presence of weight loss, higher percentage of body weight lost, increasing age, increasing duration of vomiting, and an increased frequency of vomiting/week. Exploratory celiotomy can be performed in veterinary hospitals and allows visual inspection of serosal surfaces, palpation of the stomach and small intestine, and limited mucosal visualization. It also allows for exploration and biopsy of the pancreas, mesenteric lymph nodes, and the entire small and large intestines. Directed large full-thickness biopsies can be obtained from the stomach and small intestine. Definitive treatment for some conditions (foreign bodies and tumors) can be accomplished. A duodenal aspirate for *Giardia* can be collected. Disadvantages include the need for general anesthesia, the surgical risk to the patient, post-operative morbidity and the risk for complications, and expense to the client.

Endoscopic examination lacks some of the disadvantages of the upper GI series and exploratory laparotomy. Advantages include the following: 1) visual mucosal inspection of the entire stomach and some of the duodenum, 2) directed tissue biopsy, 3)

few false-negative procedures (related to the endoscopist's skill), 4) less invasive than laparotomy, 5) quick to perform, 6) the ability to remove foreign bodies, 7) assessment of the feasibility of surgical resection of tumors, and 8) ability to obtain a duodenal aspiration sample for *Giardia*. Disadvantages include the cost of equipment, the clinical skills necessary to perform endoscopy, the small size of biopsy samples, biopsy of mucosa only, the inability to resect masses, failure to enter the duodenum, evaluation of the oral small bowel only, and the necessity of general anesthesia. Because of the usefulness of endoscopy in cases with chronic vomiting, the author routinely performs endoscopy (and reaches a diagnosis) instead of performing a barium upper GI series or exploratory laparotomy.

Thorough endoscopic examination of the stomach and duodenum of the dog and cat can be performed with a flexible fiberoptic gastroscope with an outside tip diameter of <10 mm or less. Four-way control of the tip of the endoscope is necessary. Biopsy channels of 2.8 mm in diameter or greater will provide adequate biopsy samples for histologic evaluation and accept a wide range of foreign body forceps.

The endoscopic examination is performed after an overnight fast with the animal under general anesthesia and placed in left lateral recumbency. The endoscope should only be advanced if the gastrointestinal lumen is clearly visible, reducing the possibility of tissue perforation. The endoscope is passed through the lower esophageal sphincter into the cardiac region of the stomach. Initial assessment of the rugal folds should be made before insufflation and gastric distention. Gastric mucosa appears pinker than esophageal mucosa. It is smooth, glistening, and tough. The endoscope is advanced along the greater curvature until the angularis incisura is located. Deflection of the endoscope tip towards the antrum (control knob down) will allow visualization of the antral and pyloric region. Movement of the tip towards the cardia (control knob up) will provide a retroflexed view of the gastric body, fundus and cardia. To enter the duodenum, the scope should be advanced towards the pylorus and gently pushed through. If difficulty is encountered, rolling the animal into dorsal recumbency may allow successful passage. The duodenal mucosa has a more granular appearance than the stomach and is slightly paler. A duodenal aspirate for *Giardia* should be performed.

If abnormalities are found, multiple biopsies of lesions should be taken. If gross abnormalities are not present, biopsies of standard regions should be obtained (cardia, greater curvature, angularis incisura, antrum, pylorus, and duodenum). A biopsy sample should be placed in a rapid urease test to detect the presence of *Helicobacter spp.* Multiple samples can be placed into the test media, although the author routinely places a single biopsy from the angularis into a CLO test (Tri-Med Specialties Inc. 9531 Arden, Lenexa, KS 66215, 800 874 6331). Foreign bodies can be removed with grasping forceps. In addition, brush cytology of lesions may allow rapid diagnosis.

By following the diagnostic plan outlined above, most cases with chronic vomiting can be efficiently diagnosed, allowing for development of an appropriate therapeutic plan. Systemic diseases should be thoroughly evaluated before more invasive and expensive tests are performed. Correction of dietary indiscretion or institution of a

highly digestible diet may eliminate clinical signs. The use of endoscopy allows a less invasive, more efficient and accurate diagnosis of gastrointestinal causes of chronic vomiting to be reached. Serious complications such as perforation of the stomach are very uncommon and can be avoided with careful endoscopic technique.

Table 1 - Some Causes of Chronic Vomiting

Systemic

- Diabetes mellitus
- Chronic renal failure
- Hepatobiliary diseases
- Chronic pancreatitis
- Feline hyperthyroidism
- Hypoadrenocorticism
- Lead poisoning
- Feline heartworm disease
- Systemic mastocytosis
- Drug therapy: NSAID

Gastrointestinal - Stomach

- Chronic gastritis
 - Dietary indiscretion
 - Hair-induced
 - Plasmacytic lymphocytic
 - Eosinophilic
 - Helicobacter*
- Foreign body
- Ulcer
- Neoplasia
- Pyloric hypertrophy
- Physaloptera*
- Gastric motility disorder

Gastrointestinal - Small Intestine

- Inflammatory bowel disease
 - Plasmacytic-lymphocytic
 - Eosinophilic
- Partial obstruction-stagnant loop syndrome
 - Neoplasia
 - Foreign body
 - Intussusception
 - Extra-luminal obstruction
- Diffuse mucosal lymphosarcoma
- Histoplasmosis
- Ulcer

Table 2: Comparison of Diagnostic Modalities

Diagnosis	Survey Rad	Barium UGI	Ultrasound	Endoscopy	Exp Surgery
Dietary indiscretion intolerance	-	-	-	-	-
Gastritis	-	-	-	++++	++++
IBD	-	-	-	++++	++++
Foreign body	++	++++	+ / ++	++++	++++
Neoplasia diffuse	-	++	++ / +++++	++++	++++
Neoplasia nodular	-	++	++ / +++++	++++	++++
Pyloric hypertrophy	-	++	+ / ++	++++	++++
Motility disorder	-	+++	+ / +++	++	++

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CHRONIC VOMITING CASE 1

SIGNALMENT Himalayan, 3.5 years, NM

HISTORY Chronic intermittent vomiting for 1 year
Food followed by mucus
Several hours after eating
Frequency: 2 x / week, progressed to once every day
Vomiting associated with abdominal contractions and retching
No weight loss, good appetite, no diarrhea
Diet: c/d and table scraps

PHYSICAL EXAMINATION Normal

REGURGITATION OR VOMITING (CIRCLE ONE)

DIFFERENTIAL DIAGNOSIS

Systemic Heartworm disease
Liver diseases
Hyperthyroidism

GI Dietary indiscretion
Hair-induced gastritis / duodenitis
Chronic gastritis
IBD
Gastric foreign body

DIAGNOSTIC PLAN

CBC, biochemical profile, UA, heartworm antibody, T4, fecal
+/- abdominal radiograph
+/- abdominal ultrasound
Endoscopy

Upper GI barium series
Exploratory laparotomy

DIAGNOSTIC RESULTS / DIAGNOSIS

MDB - normal
HW antibody - neg
T4 - 2.4 (1-2.5)
Fecal - neg x2, large amount of hair
Endoscopy - granular / friable duodenum, duodenal aspirate neg for *Giardia*, CLO - neg
Histopathology - normal stomach, mild IBD in SI

DIAGNOSIS

Dietary indiscretion?
Hair-induced gastritis / duodenitis?
IBD?

THERAPY

Hypoallergenic diet - d/d, frequent grooming, no table scraps
FU 4 weeks - rare vomiting, challenge with c/d - no vomiting
FU 1.5 yrs - vomiting associated with table scraps

CHRONIC VOMITING CASE 2

SIGNALMENT Pembroke Welsh Corgi

HISTORY Recurrent episodes of severe vomiting for last year
Initially every 3 months now monthly
Require hospitalization and fluid therapy
Slightly loose stool
Very lethargic
Not associated with dietary indiscretion
Vomiting associated with abdominal contractions and retching
Treatment: Amoxicillin, pancreatic enzyme powder, Neodarbazine

PHYSICAL EXAMINATION Normal, not presently having an episode

REGURGITATION OR VOMITING (CIRCLE ONE)

DIFFERENTIAL DIAGNOSIS

Systemic	Gastrointestinal
Pancreatitis	Chronic gastritis
Hypoadrenalcorticism	Gastric foreign body
Hepatic diseases	Inflammatory bowel disease
	Gastric / duodenal ulcer
	<i>Physaloptera</i>

DIAGNOSTIC PLAN

CBC, biochemical profile, UA, amylase, lipase, TLI, cPLI
Abdominal ultrasound
+/- Fecal
Gastroduodenoscopy
UGI barium series
Exploratory celiotomy

DIAGNOSTIC RESULTS / DIAGNOSIS

CBC – Eos 1243
Profile – amylase 569, lipase 0.4
Abdominal ultrasound – normal
Day 2 – vomited with flecks of blood, T 104°
RX – NPO, SC fluids, ampicillin
Amylase 517, lipase 1.3, fecal – negative
Endoscopy – diffuse gastric erosion, severe hyperemia and friability, duodenum normal, duodenal aspirate for *Giardia* – neg, gastric cytology for *Helicobacter* – neg, CLO test – neg
Histopathology – Diffuse suppurative erosive gastritis, no spiral bacteria seen with H&E or Silver stains, normal duodenum

THERAPY Canned i/d, cimetidine 10 mg/kg TID 6 weeks

NOTES / COMMENTS

Follow-up 3 weeks – no vomiting, T 105.6° for 12 H, normal appetite
Endoscopy – Normal, Histopathology – normal
therapy – continued cimetidine 4 weeks
Follow-up 20 months – Occasional mild vomiting associated with dietary indiscretion, no visits to Veterinarian

CHRONIC VOMITING CASE 3

SIGNALMENT Pekapoo, SF, 8.5 years old

HISTORY Vomiting for 1 year
Consistency has progressed: water, froth, white chunks, partially digested food
Frequency: 2-3 times/day presently
Association with eating: can be delayed up to 24 hours
Vomiting severe after drinking
Appetite excellent, no diarrhea
Vomiting associated with abdominal contractions and retching
Seizures 2 x / year
Metritis - megestrol acetate then spayed
Diet: Rice and hamburger, presently fried eggs
Treatment: antacids, cimetidine

PHYSICAL EXAMINATION Emaciation

REGURGITATION OR VOMITING (CIRCLE ONE)

DIFFERENTIAL DIAGNOSIS

Systemic	Liver diseases Chronic renal failure
GI	Gastric / duodenal neoplasia Pyloric obstruction Neoplasia, CHPG, Foreign body Motility disorder Chronic gastritis IBD

DIAGNOSTIC PLAN

CBC, biochemical profile, UA
Fecal
+/- abdominal radiograph
+/- abdominal ultrasound
Endoscopy

Upper GI barium series
Exploratory laparotomy

DIAGNOSTIC RESULTS / DIAGNOSIS

MDB - normal, fecal neg
Endoscopy - pyloric hypertrophy, duodenum normal, histopathology - no evidence of neoplasia or inflammation

DX - CHPG

THERAPY

Exploratory surgery - thickened pylorus, Y-U pyloroplasty with submucosal resection,
histopathology - cystic mucosal hypertrophy
FU 3 months - no vomiting, gaining weight