# Improve Veterinary Education

# Acute Vomiting in Dogs and Cats: Clinical Approach and Differential Diagnosis

## Definition and Clinical Presentation

Acute vomiting is defined as a presentation lasting less than one week, typically 3–5 days in duration. More severe cases are often presented to the hospital immediately, whilst cases with milder ongoing symptoms may be presented after 48–72 hours. The condition must be differentiated from regurgitation. Dogs and cats that vomit exhibit nausea and active vomiting, characterised by abdominal movement, with expelled contents originating from the stomach. Whilst vomiting is commonly associated with gastrointestinal origin, this is not always the case.

## The Importance of Comprehensive History Taking

The primary goal in evaluating acute vomiting is to ensure that red flags and life-threatening cases are not missed. Early identification significantly improves patient outcomes. Spending an additional five minutes obtaining a thorough history can save considerable time by avoiding unnecessary diagnostics later. This principle applies particularly to acute vomiting and is even more crucial in chronic vomiting cases. Many cases have required additional diagnostic workup when an inadequate initial history was obtained.

## Key Historical Parameters

Several critical distinctions must be made when obtaining the patient history. Sudden versus progressive onset is an important differentiation. Sudden vomiting tends to be associated with foreign bodies, obstructions, or tumours causing acute obstruction or rupture. In contrast, chronic progressive vomiting suggests different differentials such as food allergies, food intolerances, or long-standing foreign bodies. The frequency and character of vomiting should be documented, including whether food is vomited, the appearance of bile, and the presence of blood.

Access to toxins represents an important historical factor. Owners may be unaware that certain substances are toxic, and garbage may be contaminated with mycotoxins or contain high-fat items such as bacon or greasy foods. Plant exposure is relevant, as many plants induce gastritis in dogs and cats. These plants may be located in the garden or inside the home without the owner's awareness. Current medications must be reviewed, including both the patient's prescribed medications and any medications the animal may have accessed.

Abrupt diet changes occur more commonly than anticipated. Owners often run out of food, purchase a completely different product, and fail to perform an appropriate dietary transition, which can precipitate vomiting. Dietary indiscretion should be investigated, specifically whether the animal consumed human food or inappropriate materials. Vaccination status is particularly important in puppies, especially regarding parvovirus. In certain clinical settings, any unvaccinated puppy presenting with anorexia, vomiting, or diarrhoea receives parvovirus testing, partly to prevent hospital-wide contamination.

Deworming status should be ascertained, particularly in adopted puppies where this information may be unknown. Medication history is crucial: NSAIDs such as ibuprofen and meloxicam raise concern for gastrointestinal ulceration. Steroids similarly raise concern for ulceration, but additionally increase the risk of dietary indiscretion due to induced polyphagia, with affected animals commonly ingesting foreign material. Antibiotics may induce gastroenteritis.

**Age-Related Differential Considerations**

Age significantly influences differential diagnoses in dogs. In young animals, foreign bodies and dietary indiscretion are more common, along with infections such as parvovirus and intestinal parasites. In older dogs, neoplastic processes and metabolic diseases including renal failure and hepatic failure become more likely. In large breed dogs, gastric dilatation-volvulus (GDV) represents a critical differential, with affected animals sometimes presenting with non-productive retching or vomiting.

## Vomitus Characteristics and Their Diagnostic Significance

The characteristics of the vomitus provide diagnostic clues. Vomiting of food retained for more than eight hours suggests obstruction or hypomotility such as gastric ileus, indicating abnormal gastric emptying. The presence of bile indicates that the gastric outflow is patent, suggesting that gastrointestinal motility is at least partially preserved. Vomiting of blood raises concern for gastrointestinal erosions, ulceration, or bleeding gastric tumours. Faecal material in vomitus, whilst unfortunate, is characteristic of long-standing obstruction with retrograde movement of intestinal contents. This presentation is more common in dogs, and the vomitus typically has a foul odour.

## Physical Examination Findings

History taking must always be accompanied by thorough physical examination. Hydration status should be assessed using multiple parameters. Mucous membrane moisture can be evaluated by palpating the gums to determine if they feel sticky or moist. Ocular examination may reveal sunken eyes, particularly in dogs but also in cats. Skin turgor provides useful information, though it must be interpreted with caution in very senior animals. As animals age and lose collagen in the skin, skin turgor may be delayed even in normally hydrated patients. This is particularly common in senior cats aged 16–18 years, which may appear dehydrated despite normal fluid intake simply due to delayed skin elasticity recovery.

Heart rate serves as an additional hydration marker. Severely dehydrated patients typically present with tachycardia, as do patients in shock. Normal heart rates are generally not associated with severe dehydration, though exceptions exist. Very low heart rates raise concern for hyperkalaemia. Pulse quality should be assessed: a high heart rate combined with weak pulses suggests progression towards shock.

Abdominal palpation findings vary considerably by breed. Small dogs may be less stoical, flinching readily upon abdominal palpation, making pain assessment challenging. Nevertheless,

thorough abdominal palpation remains important. Patients with obstruction or pancreatic inflammation are typically painful on palpation. Mesenteric torsions cause extreme pain, whilst GDV cases present with marked distension and generalised discomfort. In cats, intestinal masses may be palpable on physical examination. Hepatic and splenic masses can also be readily palpated.

Rectal examination provides valuable diagnostic information. Dogs with severe diarrhoea are unlikely to have complete obstruction, though imaging should still be considered. Severe diarrhoea is generally not associated with obstruction, though partial foreign body obstruction remains possible. Rectal examination may reveal melaena even in dogs whose owners were unaware of this finding. The discovery of melaena in a dog presented for vomiting raises concern for gastrointestinal ulceration. Despite owner assurances that the dog has not ingested inappropriate items, rectal examination may reveal bone fragments or toy pieces.

## Classification of Vomiting Causes

Vomiting causes can be classified as either primary gastrointestinal or extragastrointestinal diseases. This classification framework aids in formulating differential diagnoses following history, physical examination, and often a minimum database.

## Primary Gastrointestinal Causes

Gastritis or gastroenteritis represents the most common cause of acute vomiting in dogs. This may result from dietary indiscretion (such as consuming rubbish or street detritus), sudden diet changes, or consumption of spoiled food from waste bins. Infectious agents presenting as acute gastroenteritis include hookworms, Giardia, roundworms, parvovirus, and panleukopenia in cats. Diarrhoea is typically present alongside gastritis in these cases. Bacterial causes include Salmonella, with fungal causes being more rare. These cases typically present with acute onset and are often self-limiting with or without intervention. Concurrent diarrhoea is common, evident on rectal examination, and abdominal pain is frequently absent.

Drug-induced gastritis or ulceration represents another primary gastrointestinal cause. NSAIDs such as carprofen can produce ulceration, which may appear as prominent ulcer margins with central defects showing active bleeding. Steroids can cause ulceration and, as noted, predispose dogs to foreign material ingestion. A case involving a dog that consumed numerous sticks whilst on steroids developed extensive gastric ulceration, potentially due to mechanical trauma from the sticks or steroid effects. Chemotherapy agents commonly cause vomiting, leading oncologists to often prescribe antiemetics concurrently with chemotherapy initiation. Many antibiotics cause gastroenteritis. These represent primary gastrointestinal causes related to prescribed medications.

Additionally, toxin exposure falls into this category. Dogs may consume entire bottles of chewable carprofen tablets, or access owner medications such as ibuprofen or paracetamol. All such exposures fall within this classification.

**Life-Threatening Gastrointestinal Emergencies**

Foreign bodies represent one of the most common causes in young dogs and cats. In feline patients, careful examination under the tongue is essential. Radiographic findings typically show marked intestinal distension proximal to the foreign body, with the foreign body itself creating harsh shadowing (for example, measuring 2.8 cm in diameter). Two distinct intestinal populations are visible on ultrasound: distended loops proximal to the obstruction and collapsed loops distally. Intussusceptions are readily identified with point-of-care ultrasound or abdominal ultrasonography, appearing as one intestinal segment invaginated within another, an image that is readily recognizable once seen.

GDV is best diagnosed radiographically, as the stomach is gas-filled and demonstrates the characteristic double-bubble appearance. Ruptured or obstructed gastrointestinal neoplasm, resulting in septic abdomen, presents as a life-threatening emergency with acute vomiting. These patients typically present with abdominal effusion visible on imaging. Fluid samples can be obtained and submitted for laboratory analysis. In emergencies, immediate cytological examination can be performed, revealing numerous neutrophils containing intracellular bacteria, confirming septic abdomen. Additionally, comparison of glucose and lactate

concentrations between abdominal effusion and peripheral blood aids diagnosis. In septic abdomen, abdominal fluid glucose concentration is lower than peripheral blood glucose concentration.

**Extragastrointestinal Causes**

Numerous extragastrointestinal causes of acute vomiting exist. Endocrine diseases include Addison's disease and diabetic ketoacidosis (DKA). DKA is often associated with concurrent pancreatic inflammation, exacerbating vomiting. Hyperthyroid cats may present with vomiting alongside other signs such as polydipsia, polyuria, and hyperactivity, though vomiting may be the primary clinical sign.

Toxic exposure, whether to prescribed medications or inappropriately accessed drugs, can cause vomiting. Dogs with severe hypercalcaemia secondary to vitamin D toxicosis present with vomiting. Physical examination may reveal oral ulceration, severe dehydration, polydipsia, and polyuria.

Renal causes frequently present with anorexia and vomiting as primary clinical signs. In renal failure patients, vomiting occurs predominantly due to stimulation of the chemoreceptor trigger zone in the brain, rather than gastric ulceration. Multiple studies examining dogs and cats with chronic kidney disease via endoscopy have demonstrated absence of gastric ulceration. The vomiting mechanism is central nervous system-mediated rather than arising from gastrointestinal pathology.

Hepatobiliary causes include hepatitis (infectious or inflammatory) and portosystemic shunts. Cats with portosystemic shunts may present with ptyalism following meals as the sole clinical sign, making diagnosis challenging. Gallbladder mucoceles can present with vomiting. These patients typically demonstrate elevated hepatic enzyme activities, occasionally elevated total bilirubin, and increased bile acid concentrations in portosystemic shunt cases.

Pancreatitis, whether acute or chronic, presents with vomiting. Neurological causes, including vestibular disease and increased intracranial pressure, result in vomiting and lethargy.

## Pathophysiology of Extragastrointestinal Vomiting

The numerous extragastrointestinal causes of vomiting reflect the multiple neural pathways converging on the vomiting centre. Cats are particularly prone to vomiting from diverse causes. This underscores the importance of obtaining a comprehensive minimum database to exclude emergencies, followed by systematic analysis of vomiting in dogs and cats given the extensive differential list. Multiple pathways lead to the vomiting centre, including gastrointestinal receptors, cerebral cortex, chemoreceptor trigger zone (where uraemic and hepatic toxins act), and the vestibular system.