# CONTENTS

**Preface** xi
Michael D. Willard

**Esophagitis and Esophageal Strictures** 945
Rance K. Sellon and Michael D. Willard

Esophagitis and esophageal strictures are important causes of esophageal disease in dogs and cats. Clinical suspicion is created when the clinician recognizes the clinical signs suggestive of esophageal disease and accounts for historical information and physical examination findings. Once suspected, the diagnosis of esophagitis and esophageal strictures is a fairly simple one in most cases. Although the benefit of diminishing secretion of gastric acid in patients with esophagitis is unquestioned, other questions regarding adjunctive medical treatments, such as sucralfate and glucocorticoids for dogs and cats with esophagitis, have not been answered through appropriate clinical studies. Esophageal strictures are readily treated with balloon dilation or esophageal bougienage, and clients can expect most patients to become functional, although dietary change may be necessary.

**Canine Gastritis** 969
Craig Webb and David C. Twedt

Gastritis—inflammation of the stomach—is a frequently cited differential yet rarely characterized diagnosis in cases of canine anorexia and vomiting. Although the list of rule-outs for acute or chronic gastritis is extensive, a review of the veterinary literature reveals fewer than 15 articles that have focused on clinical cases of canine gastritis over the last 25 years. The dog frequently appears in the human literature as an experimentally manipulated model for the study of endoscopic techniques or the effect of medications on gastric mucosa. In the veterinary patient, cases of acute gastritis are rarely pursued with the complete diagnostic armamentarium,

and cases of chronic gastritis are rarely found to occur as an entity isolated from the rest of the gastrointestinal tract. This article focuses on those findings most clinically relevant to cases of canine gastritis in veterinary medicine.

**Gastric Dilatation-Volvulus Syndrome in Dogs** 987
Eric Monnet

Gastric dilatation-volvulus is a medical and surgical emergency that principally affects large-breed dogs. Surgical treatment should be undertaken as soon as the patient has been stabilized with fluid therapy and decompression. A gastrectomy might be required if the stomach is becoming necrotic. A gastropexy is required to prevent recurrence.

**Gastrointestinal Motility Disorders and Gastrointestinal Prokinetic Therapy** 1007
Robert J. Washabau

Gastrointestinal motility disorders represent a diagnostic and therapeutic challenge. Disorders of gastrointestinal motility may result in accelerated transit, delayed transit, impaired relaxation, or inappropriate relaxation. The delayed transit disorders are the most important motility disorders of companion animals and may involve the esophagus (hypomotility and megaesophagus), stomach (delayed gastric emptying), small intestine (postoperative ileus and intestinal pseudo-obstruction), or colon (constipation and megacolon).

**Bacterial-Associated Diarrhea in the Dog: A Critical Appraisal** 1029
Stanley L. Marks and Elizabeth J. Kather

The clinical documentation of enteropathogenic bacteria causing diarrhea in dogs is clouded by the presence of many of these organisms existing as normal constituents of the indigenous intestinal flora. The diagnosis of a putative bacterial enteropathogen(s) in dogs should be made based on a combination of parameters, including signalment and predisposing factors, clinical signs, serologic assays for toxins, fecal culture, and PCR. Relying on results of fecal culture alone is problematic, because *Clostridium perfringens, C difficile, Campylobacter* spp, and pathogenic and nonpathogenic *Escherichia coli* are commonly isolated from apparently healthy dogs. Nevertheless, culture may be useful in procuring isolates for the application of molecular techniques, such as polymerase chain reaction (PCR), for detection of specific toxin genes or molecular typing of isolated strains to establish clonality in suspected outbreaks. The oversimplistic attempt to characterize bacterially associated diarrhea by anatomic localization of clinical signs should be discouraged, because most of the previously mentioned bacteria have

been associated with small and large intestinal diarrhea. Accurate diagnosis of infections may require diagnostic laboratories to incorporate PCR-based assays using genus- and species-specific primers to facilitate detection of toxin genes and differentiation of species that appear phenotypically and biochemically similar. There has been tremendous interest in the application of microarray technology for the simultaneous detection of thousands of genes or target DNA sequences on one glass slide. This powerful tool could be used for detection of specific pathogenic bacterial strains in fecal specimens obtained from dogs in the future.

**Protein-Losing Enteropathies** 1061
Polly B. Peterson and Michael D. Willard

Gastrointestinal (GI) protein loss can result from a heterogeneous group of diseases, including lymphangiectasia, inflammatory bowel disease, neoplasia, ulceration, intussusception, and histoplasmosis. Protein-losing enteropathy (PLE) should be suspected in any hypoalbuminemic patient with no evidence of exudative protein loss, proteinuria, or hepatic insufficiency. A minimum laboratory database for the suspected PLE patient should include a complete blood cell count, a biochemical and electrolyte profile, urinalysis ($\pm$ urine protein:creatinine ratio), and pre- and postprandial bile acid determinations. Fecal $\alpha_1$-proteinase inhibitor concentrations may be used to confirm the presence of GI protein loss in cases with concurrent renal or hepatic disease. Because PLE is a syndrome and not a specific disease, the most effective therapy must be directed at the underlying cause. Multiple high-quality endoscopic biopsies are sufficient to diagnose most patients with PLE, although full-thickness biopsies are required in some cases. Patients with PLE are often clinically "fragile," and careful symptomatic therapy must be integrated with dietary and medical management strategies in most cases.

**Feline Gastrointestinal Lymphoma** 1083
Keith P. Richter

Gastrointestinal lymphoma is a common cause of anorexia and weight loss in older cats, with or without vomiting or diarrhea. Most cats are feline leukemia virus-negative and feline immunodeficiency virus-negative. Low-grade gastrointestinal lymphoma may be more common than previously thought, and these cats respond better to chemotherapy agents than cats with high-grade lymphoma. The most significant prognostic indicator is initial response to chemotherapy, with cats that survive the initial induction period generally achieving long-term remission. Thus far, investigations into molecular markers and immunophenotyping have failed to identify useful prognostic indicators.

1099

**Biopsy of the Gastrointestinal Tract**
Joanne Mansell and Michael D. Willard

Gastrointestinal biopsy is a potentially powerful tool, but it is easy to do it incorrectly. If clinicians are careless in performing or submitting biopsies, or if they blindly believe whatever the histopathology report says, they are abdicating their responsibility to the client and patient. Two comments seem most appropriate. First, the goal of endoscopy is not to be able to place the tip of an endoscope in a particular location; rather, the goal of endoscopy is to be able to access a particular location and then take a diagnostic specimen well enough that surgery can be avoided. Second, attention to detail is worth at least as much if not more than technology.

1117

**Gastric and Intestinal Surgery**
Theresa W. Fossum and Cheryl S. Hedlund

Gastric surgery is commonly performed to remove foreign bodies and correct gastric dilatation-volvulus and is less commonly performed to treat gastric ulceration or erosion, neoplasia, and benign gastric outflow obstruction. Intestinal surgery, although commonly performed by veterinarians, should never be considered routine. The most common procedures of the small intestinal tract performed in dogs and cats include enterotomy and resection/anastomosis. Surgery of the large intestine is indicated for lesions causing obstruction, perforations, colonic inertia, or chronic inflammation.

1147

**Laparoscopy**
Eric Monnet and David C. Twedt

Laparoscopy allows diagnosis and surgical intervention with minimally invasive technology. Liver, pancreatic, intestinal, and kidney biopsies can be performed on a routine basis for the diagnosis of different pathologic conditions. Ovariohysterectomy, cryptorchidism, jejunostomy tube feeding placement, and preventive gastropexy are accomplished by means of laparoscopy in dogs.

1165

**Exocrine Pancreatic Insufficiency in Dogs**
Elias Westermarck and Maria Wiberg

Pancreatic acinar atrophy (PAA) is by far the most common cause for the maldigestion signs of canine exocrine pancreatic insufficiency (EPI). The ability to diagnose PAA in the subclinical phase before the development of total acinar atrophy and manifestation of clinical signs has offered new possibilities to study the pathogenesis of the disease. Marked T-lymphocyte infiltration during the progression of acinar atrophy and the genetic susceptibility of the disease have been taken as a primary evidence of the autoimmune nature of the disease. The term *autoimmune-mediated atrophic lymphocytic pancreatitis* is preferred to describe pathologic findings. A single abnormally, low serum canine trypsin-like immunoreactivity

(cTLI) concentration (<2.5 mg/L), in dogs with typical maldigestion signs has been shown to be highly diagnostic for clinical EPI and is found in dogs with end-stage PAA. Repeatedly subnormal cTLI values (2.5-5.0 μg/L) in dogs with no clinical signs of EPI are valuable markers of subclinical EPI and highly suggestive for partial PAA. The primary treatment of EPI is supplementing each meal with pancreatic enzymes. The long-term treatment response for the nonenteric-coated enzyme supplements has been found to be good in half of these dogs, but the response varied considerably.

**Diagnosis of Pancreatitis** **1181**
Jörg M. Steiner

Pancreatitis is common in dogs and cats, but it seems that most cases remain undiagnosed. Serum amylase and lipase activities are useful as a quick screening test for pancreatitis in the dog only. Serum amylase or lipase activity must be at least three to five times the upper limit of the reference range to suggest a diagnosis of pancreatitis. Furthermore, the diagnosis must be confirmed by other diagnostic modalities, and normal test results do not eliminate the possibility of pancreatitis. Abdominal ultrasound is highly specific for pancreatitis in dogs and cats but is not particularly sensitive, especially in cats. Serum canine pancreatic lipase immunoreactivity concentration is highly specific for exocrine pancreatic function and is also highly sensitive for pancreatitis. Similarly, initial data would suggest that serum feline pancreatic lipase immunoreactivity is the most sensitive and specific diagnostic test for feline pancreatitis. Until further data are available, however, serum feline pancreatic lipase immunoreactivity should be used in conjunction with other diagnostic tests to arrive at a diagnosis of feline pancreatitis. Histopathologic evidence of pancreatitis is conclusive for a diagnosis of pancreatitis. In most cases, however, lesions are localized, and the lack of histopathologic evidence of pancreatitis does not eliminate a diagnosis pancreatitis.

**Index** **1197**