Objective—To characterize imaging findings in cats with confirmed inflammatory bowel disease (IBD) of the upper gastrointestinal tract (ie, stomach and small intestine) and relate these findings to clinical signs and histologic changes.

Design—Retrospective study.

Animals—33 cats with clinical and histopathologic diagnoses of IBD.

Procedure—Medical records were reviewed for signalment, clinical signs, clinicopathologic findings, radiographic and ultrasonographic findings, and results of endoscopic examination. Histologic findings were reviewed and characterized by severity and type of inflammatory infiltrate.

Results—All cats had 1 or more clinical signs (eg, vomiting, diarrhea, weight loss, and anorexia) consistent with IBD. Lymphocytic and plasmacytic infiltrates were observed in histologic sections of gastrointestinal tissue. Crypt distortion, villous blunting and fusion, and fibrosis were most commonly seen in cats with moderate or severe IBD. Clinicopathologic findings of some cats included anemia, leukocytosis or leukopenia, hypocholesterolemia, and hyper- or hypoproteinemina. Abnormalities were not found on abdominal radiographic views in 9 of 9 cats. However, contrast studies using barium revealed radiographic abnormalities in 1 of 3 cats. In 13 of 17 cats, abdominal ultrasonography revealed several intestinal abnormalities (eg, poor intestinal wall layer definition, focal thickening) and large mesenteric lymph nodes with hypoechoic changes consistent with IBD. Endoscopic observation revealed findings (eg, erythema, plaques, mucosal friability) consistent with inflammation in 9 of 18 cats.

Conclusions and Clinical Relevance—Compared with endoscopy of the gastrointestinal tract or abdominal radiography, clinical signs and ultrasonographic findings appear to have the best association with histologic grade of IBD in cats. (J Am Vet Med Assoc 1998;215:349-354)

Inflammatory bowel disease (IBD) is a common syndrome in cats involving the proximal or distal portions of the gastrointestinal tract. It is generally characterized by infiltration of the gastrointestinal tract by lymphocytes, plasma cells, and sometimes neutrophils and eosinophils. The clinical signs commonly associated with IBD are vomiting, diarrhea, anorexia, and weight loss, but clinical signs may vary depending upon the site of inflammation. The pathogenesis of the disorder is not completely understood, but prevailing theory supports the notion of enterocyte and immunocyte reactivity to bacterial or food antigens. Various methods are used to characterize IBD, including clinicopathologic testing, imaging techniques, and histologic evaluation of biopsy specimens. A diagnosis is generally made by excluding other primary disease processes associated with gastrointestinal inflammation and finding inflammatory infiltrates on biopsy specimens of the gastrointestinal tract. Findings on abdominal radiography and ultrasonography and endoscopy of the gastrointestinal tract are characterized in dogs with IBD, but similar findings are rarely described for cats with IBD. The purpose of the study presented here was to evaluate the radiographic, ultrasonographic, and endoscopic findings in cats with a histologic diagnosis of mild, moderate, or severe IBD of the upper gastrointestinal tract (ie, stomach and small intestine).

Criteria for Selection of Cases

Medical records of all cats admitted to the University of Pennsylvania Veterinary Teaching Hospital between January 1990 and April 1997 were reviewed. Cats were included in the study if they had gastroenterologic signs of IBD (ie, vomiting, diarrhea, weight loss, or anorexia), histologic findings on biopsy specimens of the upper gastrointestinal tract consistent with IBD (ie, infiltration of the lamina propria with a combination of lymphocytes, plasma cells, eosinophils, neutrophils, or macrophages), and completion of 1 or more examinations to evaluate the gastrointestinal tract (ie, radiographic, ultrasonographic, or endoscopic examination).

Medical records were reviewed for evidence of concurrent disease processes that could potentially result in clinical signs similar to those of IBD. Cats were excluded from the study if other primary causes of gastrointestinal inflammation (eg, neoplasia, parasite infestation, bacterial infection), renal failure, common toxicoses, or hyperthyroidism were identified; other primary diseases of the gastrointestinal tract could not be excluded in all affected cats because of the retrospective nature of the study.

Procedures

Medical records were reviewed for signalment, history, physical examination findings, laboratory test
results, and radiographic, ultrasonographic, endoscopic, surgical, and histologic findings. Information on CBC results and serum biochemical analyses were available for all cats. Other diagnostics included serologic tests for FeLV (14 cats) and feline immunodeficiency virus (10), zinc sulfate fecal flotation (14), and fecal bacterial (Campylobacter and Salmonella organisms) cultures (13). Serum thyroxine concentrations were determined in 16 cats, and 7 cats were tested for heartworm (Dirofilaria immitis) infection using an antigen test. Urine testing was performed on gastric biopsy specimens from 4 cats. Miscellaneous tests included coagulation screen (ie, determination of prothrombin time and partial thromboplastin time) in 5 cats and determination of serum trypsin-like immunoreactivity concentration in 6 cats.

Radiographic and ultrasonographic views of the abdomen that were available were reviewed by a single consultant (LMW) who was blinded to the clinical signs and severity of histologic findings in cats. Abdominal radiographs were evaluated for gastrointestinal abnormalities, including small-intestinal diameter ≥10 mm, luminal content that appeared to be other than gas or fluid, and radiographic detection of midabdominal masses suggestive of mesenteric lymphadenopathy. In some cats, barium contrast examination had been done by administering a 25% barium sulfate suspension (13.4 ml/kg [6 ml/lb] of body weight) via nasogastric tube and obtaining abdominal radiographic views immediately and at various intervals thereafter until contrast material entered the colon and emptied completely out of the stomach. Floculation of barium contrast material, irregular barium and mucosal interface, delayed transit time (in healthy cats, contrast medium is in the ascending colon by 60 minutes), and persistent adherence of barium to the mucosa were considered abnormal findings.

Available ultrasonographic images of the abdomen were evaluated for small-intestinal abnormalities, including altered echogenicity, small-intestinal wall thickening (in healthy cats, the mucosal to serosal width is <3 mm in the sagittal plane), and poor small-intestinal wall layer definition. Altered echogenicity included any change in the typical hyperchoic submucosa and serosal layers and the hypoechoic mucosal and muscularis layers. Abdominal ultrasonographic views were also evaluated for mesenteric lymph node size and echogenicity (in healthy cats, mesenteric lymph nodes are isoechoic compared with adjacent mesenteric or muscular tissues).

Descriptive reports of endoscopic findings had been made by several endoscopists. When available, photographs and videotapes of endoscopic findings were reevaluated by 1 endoscopist (JLB). Senior clinicians and house officers directly supervised by senior clinicians performed all endoscopic examinations. Fiber-optic and video chip flexible endoscopes were used in all cats. Cats were anesthetized with an inhaled agent and placed in left lateral recumbency. Endoscopic examination had been performed in a systematic manner, dividing the stomach and duodenum into 5 regions, including the cardia, the cardia to the pyloric antrum (greater curvature), the angularis incisura, the pylorus and the pyloric antrum, and the proximal portion of the duodenum up to the duodenal papilla. The esophagus and lower esophageal sphincter were also examined, and biopsy specimens were obtained after endoscopic inspection from any or all of the following locations: cardia, angularis incisura, greater curvature, and pylorus.

The duodenum and proximal aspect of the jejunum were also examined and biopsied. Biopsy specimens were consistently taken from areas of inflammation, as well as from adjacent noninflamed areas. The endoscopists had described the appearance of the mucosa as normal (noninflamed), or as areas of inflammation with hyperemia, hemorrhage, friability, or granularity. The mucosa had been determined to be friable on the basis of the ease at which it was damaged by the endoscope or by biopsy forceps. Other abnormalities, such as erosions (superficial defect of the mucosa), plaques, or ulcers (deep mucosal defect with raised margin) were also recorded.

In cats that had an exploratory laparotomy, a central midline incision had been made, and a routine examination of the gastrointestinal tract was performed along with direct examination of the pancreas, kidneys, mesenteric lymph nodes, liver, and biliary tract. After obtaining necessary biopsy specimens, the abdomen was closed in a routine manner, and cats were allowed to recover from anesthesia. For most cats, it was impossible to determine from the medical records why surgery was performed to obtain biopsy specimens instead of endoscopy.

Biopsy specimens from the gastrointestinal tract (stomach and small intestine), whether obtained by exploratory laparotomy or endoscopy, had been fixed in neutral-buffered 10% formalin and routinely processed for histologic examination. Five-micron-thick sections were cut from paraffin-embedded blocks and stained with H&E.

A single pathologist (MJH) reviewed all the available sections of biopsy specimens. Specimens were evaluated histologically and graded as mild, moderate, or severe, compared with specimens from healthy cats. In general, a grade of mild was given to those sections having a low number of inflammatory cells in the gastric mucosa or intestinal lamina propria without other changes. High numbers of inflammatory cells, along with separation and distortion of glands or crypts and mild villous blunting, constituted a moderate grade. A section was graded as severe when there were high numbers of inflammatory cells with marked separation of glands or crypts, fibrosis, and marked villous blunting and fusion. Tissues other than those of the gastrointestinal tract (eg, liver, kidney, spleen, pancreas, mesenteric lymph nodes) were evaluated histologically when available.

Results

Thirty-three cats met the criteria for inclusion in the study. Most affected cats were of domestic shorthair breeding (22/33; 67%). Other breeds included Siamese (3 cats), Abyssinian (2), Devon Rex (2), Himalayan (2), Maine Coon (1), and Persian (1). Of 33 cats, 22 (67%) were neutered males, 8 (24%) were spayed, and
3 (9%) were sexually intact females. The mean age of the cats at the time of admission was 7 years old (range, 7 months to 15 years).

The most common clinical signs of IBD were vomiting (24/33; 73%), weight loss (18/33; 55%), diarrhea (16/33; 48%), and partial or complete anorexia (6/33; 18%). Most cats (23/33; 70%) had multiple clinical signs; other cats (3/33; 9%) had primarily nonspecific signs, such as lethargy. The duration of clinical signs ranged from 1 week to 5 years (mean, 12.5 months).

Biopsy specimens of the gastrointestinal tract (stomach and small intestine) were obtained from 17 cats during exploratory laparotomy and from 18 cats during endoscopic examination (2 of 33 cats had both procedures performed). In addition, biopsy specimens were also obtained from the mesenteric lymph nodes (6 cats), liver (7), colon (4), spleen (1), pancreas (1), and kidney (1) during exploratory laparotomy.

Plasmacyc and lymphocytic infiltrates were seen on histologic examination of sections of gastrointestinal biopsy specimens from 24 and 26 of 33 cats, respectively. Eleven cats had biopsy specimens with eosinophilic infiltration, and neutrophilic infiltrates were seen in biopsy specimens from 10 of 33 cats.

Other abnormalities observed on the biopsy specimens included lymphangiectasia, edema, villous blunting and fusion, crypt hyperplasia, and fibrosis (Table 1). Of 33 cats, 7 (21%) had biopsy specimens with histopathologic changes consistent with mild IBD, 17 (52%) had a histopathologic diagnosis of moderate IBD, and 9 (27%) had a histopathologic diagnosis of severe IBD.

Of the 7 cats with a histopathologic diagnosis of mild IBD, 6 had a history of vomiting, 3 had weight loss, and 3 had diarrhea. Of the 17 cats with moderate IBD, 11 had a history of vomiting, 9 had weight loss, and 7 had diarrhea. Of the 9 cats with severe IBD, all had a history of vomiting, 6 had weight loss, and 5 had diarrhea. Multiple clinical signs were observed in 5, 10, and 6 cats with mild, moderate, and severe IBD, respectively.

Other histologic abnormalities included lymphoid hyperplasia in 5 cats and sinus histiocytosis in the mesenteric lymph node from 1 cat. Two cats had liver biopsy specimens that appeared normal, 2 cats had hepatic cell hyperplasia, and 4 cats had evidence of cholangiohepatitis. Four cats had lymphocytic-plasmacytic colitis, and 1 cat each was affected with chronic membranous glomerulonephritis, interstitial lymphocytic-plasmacytic infiltrate and fatty infiltration of the pancreas, and focal splenic congestion.

Of 33 cats, 6 (18%) were anemic. Anemic cats had a mean PCV of 23% (values ranged from 14 to 28%). Five of the 6 cats had a nonregenerative anemia and 1 cat had a mildly regenerative anemia. Five of 33 cats (15%) had neutropenia with a left shift. Neutrophilic cats had a mean segmented neutrophil count of 24,600 cells/μl (range, 11,600 to 32,600 cells/μl) and a mean band neutrophil count of 738 cells/μl (range, 232 to 1,100 cells/μl).

Other abnormalities detected on CBC included leukocytosis in 4 of 33 cats (12%). Cats with leukocytosis had a mean WBC count of 25,770 cells/μl (values ranged from 16,900 to 37,850 cells/μl). Three of 33 cats (9%) were leukopenic with a mean WBC count of 5,133 cells/μl (range, 5,000 to 5,300 cells/μl). Four of 33 cats (12%) were lymphopenic with a mean lymphocyte count of 1,112 cells/μl (range, 1,000 to 1,200 cells/μl).

Hypcholesterolemia was 1 of the most common abnormalities on serum biochemical analyses and was detected in 10 of 33 cats (30%). Mean serum cholesterol concentration in the 10 cats was 95 mg/dl (values ranged from 51 to 117 mg/dl). Ten of 33 cats (30%) had hyperproteinemia with a mean serum protein concentration of 7.83 g/dl (range, 7.2 to 9.7 g/dl). Four of the cats with hyperproteinemia also had high serum albumin concentrations with a mean of 3.8 g/dl (range, 3.7 to 4.0 g/dl). Eight of 33 cats (24%) were hyperproteinemic with a mean serum protein concentration of 4.86 g/dl (range, 3.8 to 5.4 g/dl). Hypoalbuminemia was detected in 5 of 33 cats (15%); mean, 2.13 g of albumin/dl; range, 1.6 to 2.6 g/dl). Hypocholesterolemia was detected in 5 of 33 cats (15%; mean, 105 mmol of cholesterol/L; range, 84 to 115 mmol/L), and hyperglycemia was observed in 4 of 33 cats (12%; mean, 182 mg of glucose/dl; range, 141 to 263 mg/dl). High serum alanine aminotransferase activities were observed in 5 of 33 cats (15%; mean, 209 U/L; range, 110 to 609 U/L), and 1 cat (3%) had high serum alkaline phosphatase activity (323 U/L) and high serum cholesterol concentration (224 mg/dl).

Survey abdominal radiographs from 9 cats and barium contrast studies from 3 cats were available for review. All 9 cats had abdominal radiographs that were normal in appearance. Of the 3 cats that had barium contrast studies, 2 had results that were considered normal, and 1 had evidence of a slightly irregular small-intestinal wall in 1 segment.

Ultrasoundographic views of the abdomen of 17 of 33 cats were available for review. Thirteen of 17 cats had ultrasonographic abnormalities consistent with IBD. Evaluation of the 17 cats on the basis of histologic grades of IBD revealed that 4, 8, and 5 cats had mild, moderate, and severe IBD, respectively. Of the cats with

| Table 1—Histopathologic findings in sections of biopsy specimens of affected areas of the gastrointestinal tract from 33 cats with inflammatory bowel disease (IBD)* |
|-----------------|---------|---------|---------|
| Variables       | Mild    | Moderate| Severe  |
| Infiltrates     |         |         |         |
| Lymphocytes     | 0/7     | 15/17   | 7/9     |
| Plasma cells    | 0/7     | 14/17   | 7/9     |
| Eosinophils     | 0/7     | 7/17    | 1/9     |
| Neutrophils     | 0/7     | 7/21    | 4/9     |
| Other           |         |         |         |
| Lymphangiectasia| 0/7     | 2/17    | 2/9     |
| Edema           | 0/7     | 1/17    | 1/9     |
| Villous blunting/fusion | 0/7 | 3/17 | 4/9 |
| Crypt hyperplasia| 0/7 | 1/17 | 2/9 |
| Fibrosis        | 0/7     | 0/17    | 2/9     |
| *IBD of the upper gastrointestinal tract (ie, stomach and small intestine). |
| 1Mild = low number of inflammatory cells in the gastric mucosa or intestinal lamina propria without other changes. Moderate = high numbers of inflammatory cells with separation and distortion of glands or crypts and mild villous blunting. Severe = high numbers of inflammatory cells with marked separation of glands or crypts, fibrosis, and marked villous blunting and fusion. |

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mild, moderate, and severe IBD. 3 of 4, 5 of 8, and 5 of 5 cats, respectively, had abnormalities detected on abdominal ultrasonography. Ten cats had small intestinal wall abnormalities detected on ultrasonography as follows: 3 of 4 cats, 3 of 8 cats, and 4 of 5 cats with mild, moderate, and severe IBD, respectively. Five cats had mesenteric lymph node abnormalities detected on ultrasonography as follows: 0 of 4 cats, 2 of 8 cats, and 3 of 5 cats with mild, moderate, and severe IBD, respectively.

Ultrasonographic abnormalities of the small intestine included indistinct wall layers (2 cats) and focal thickening and a hypoechoic mucosa (Fig 1). The remaining 5 cats had various abnormalities of the small intestine, including a hypoechoic mucosal layer (1 cat), focal thickening and indistinct wall layers (1), diffusely hypoechoic wall (1), thick muscularis and hypoechoic mucosa (1), and inolding of mucosa (1). Of 5 cats with abnormal mesenteric lymph nodes, 2 had mesenteric lymph nodes that were hypoechoic and 3 had mesenteric lymph nodes that were hypoechoic and large.

Eighteen of 33 cats had endoscopic examination of the gastrointestinal tract. Endoscopic abnormalities observed in the stomachs of 5 of the 18 cats included white plaques, friable tissue, and an erythematous appearance. Abnormalities of the gastric mucosa were seen in 1 of 3 cats with mild IBD, 2 of 8 cats with moderate IBD, and 2 of 7 cats with severe IBD.

The endoscopic abnormalities observed in the duodenum of 9 of the 18 cats included friable tissue, edema, and erythematous, granular appearing tissue (Fig 2). Small-intestinal abnormalities were observed in 1 of 3 cats with mild IBD, 3 of 8 cats with moderate IBD, and 5 of 7 cats with severe IBD. Nine of the 18 cats with histologic evidence of IBD in the duodenum had normal endoscopic findings, regardless of histologic grade.

Exploratory laparotomy had been performed in 17 of 33 cats. Abnormal findings included large mesenteric lymph nodes (4 cats) and thickened small intestinal walls (3). A small, fibrotic pancreas was observed in 1 cat that was subsequently determined to have exocrine pancreatic insufficiency. Pyloromyotomy was performed in 1 cat with a thick pylorus to facilitate gastric emptying. Two cats had livers that appeared abnormal.

Discussion

Results of our study indicate that abdominal ultrasonography is a useful imaging technique to detect various abnormalities in cats with IBD. In addition to potentially determining the severity of the disease process, abdominal ultrasonography may provide information that can be used to determine whether exploratory laparotomy should be pursued to obtain biopsy specimens rather than acquiring endoscopic biopsy specimens.

In our study, 13 of 17 cats with IBD had abnormal appearances of the gastrointestinal tract, mesenteric lymph nodes, or both on abdominal ultrasonography. In many affected cats, ultrasonographic findings did appear to be related to the histologic grade of IBD. Because of this finding, we conclude that abdominal ultrasonography should be performed routinely in the diagnostic workup of cats admitted with clinical signs observed in our study.

Intestinal wall thickening is a consistent finding in humans with IBD and was the most common find-
ing in a study of ultrasonographic changes in dogs and cats with gastrointestinal disorders. However, cats in the aforementioned study did not have IBD as a disease process, and generalized thickening of the intestinal wall was seen in only 2 cats that were ultimately determined to have intestinal adenocarcinoma and lymphosarcoma, respectively.

In our study, all of the cats with severe IBD had ultrasonographic abnormalities, either small-intestinal wall or mesenteric lymph node abnormalities. It was interesting that 3 of 3 cats with severe IBD in this study had mesenteric lymph node abnormalities on ultrasonographic examination. Mesenteric lymph node abnormalities on ultrasonographic examination were not seen in any cat with mild IBD and in only 2 of 8 cats with moderate IBD. One of the cats with moderate IBD had exploratory laparotomy performed at another hospital prior to ultrasonography, so the abnormal mesenteric lymph node appearance may have been a surgically induced reactive response. On the basis of these results, it would appear that the finding of hypoechoic or large abdominal mesenteric lymph nodes may be more commonly associated with severe IBD.

Endoscopic abnormalities were observed in half the cats in our study with IBD. Results of another study indicate a higher association between endoscopic and histologic abnormalities than was found in our study. Only 5 of 18 cats with IBD in our study had gastric mucosa that appeared abnormal on endoscopic examination, despite histologic changes consistent with IBD. However, half of the 18 cats with IBD had abnormalities detected on endoscopic examination of the duodenum.

Results of other studies indicate that there are endoscopic abnormalities in 42 to 82.8% of cats with histologically confirmed IBD. As in our study, endoscopic abnormalities were somewhat dependent upon histologic grade. In our study, cats with a histopathologic diagnosis of severe IBD were more likely to have abnormalities of the duodenum detected on endoscopic examination, compared with cats with mild or moderate IBD. During endoscopic examination, tissue friability was a consistent abnormality, especially in the small intestine. In another report, it was determined that 82% of dogs and cats with IBD and friable mucosal lining also had abnormal histologic findings. The results of our study appear to substantiate the importance of careful endoscopic examination, including tissue biopsy of the small intestine. Like ultrasonography, endoscopy is operator-dependent and somewhat dependent upon subjective variables. Even subtle changes in the endoscopic appearance of the small intestine should raise clinical suspicion for IBD. Regardless of appearance, biopsy specimens should be obtained from many locations throughout the gastrointestinal tract and include the muscularis layer of the mucosa. The inclusion of this layer is necessary in order to identify mucosal atrophy.

The lack of radiographic abnormalities in cats with IBD in our study is consistent with the results of other studies. Contrast studies may be useful in affected cats to rule out partial obstructions or motility disorders but generally are nonspecific for IBD. Minimal radiographic abnormalities were observed in only 1 of 3 cats undergoing contrast radiography in our study. It is possible that more abnormalities of the gastrointestinal tract would have been detected if more contrast radiographic studies had been performed.

Vomiting, diarrhea, weight loss, and partial or complete anorexia were common clinical signs in cats with IBD in our study. Similar to other reports, the cats in our study had a history of intermittent signs in many instances, rather than progressive disease. Results of another study indicate that there is an association between weight loss and histologic grade in cats with IBD. In our study, all cats with severe IBD had vomiting as a clinical sign; however, most cats with a diagnosis of mild IBD also had vomiting as a clinical sign at the time of admission. Cats with severe IBD were most likely to have multiple clinical signs (vomiting, diarrhea, and weight loss), whereas cats with mild IBD tended to be admitted with 1 predominant clinical sign. This could be a reflection of chronicity of the disease in most cats with severe IBD, but there were instances of cats with mild IBD that had persistence of 1 clinical sign for as long as 6 months to a year, without development of new clinical signs. Thus, chronicity of illness may not necessarily reflect the severity of the disease process, but the number and severity of clinical signs may be a good indicator of severity of histologic changes.

Complete blood count and serum biochemical analysis were performed to rule out other systemic abnormalities. Results of CBC were consistent with what is described for cats with IBD. Most of the serum biochemical abnormalities were nonspecific and have been reported. One cat with high serum alanine aminotransferase activity was found to have a histopathologic diagnosis of concurrent nonsuppurative cholangiohepatitis. It is speculated that hepatobiliary and pancreatic disease may be extraintestinal manifestations of IBD. A relationship between cholangiohepatitis, pancreatitis, and IBD seems clear, but the pathogenesis of the relationship remains unclear. Pancreatic and hepatobiliary reflux may be the mechanisms for the extraintestinal manifestations of IBD. In our study, 7 cats had liver biopsies, and 4 of these had evidence of cholangiohepatitis. In such affected cats it is difficult to conclude whether clinical signs are caused by IBD or cholangiohepatitis. We chose not to exclude cats with concurrent cholangiohepatitis from this study because the 2 entities may share the same pathogenesis in many instances.

Several attempts have been made to classify IBD using different histologic grading systems but it is ultimately a subjective assessment that will vary among pathologists. We adopted the convention of a mild, moderate, or severe grading system because it permitted us to relate several clinical variables (eg, clinical signs, imaging findings) to severity of inflammation. Many inflammatory processes can induce histologic changes in the small intestine of cats; hence, it is necessary to rule out other potential causes of inflammation (eg, food allergy, parasites, bacterial overgrowth, viral infection, neoplasia) before making a diagnosis of idiopathic IBD. It is especially important.
to be critical of a histopathologic diagnosis of mild IBD made on the basis of a biopsy specimen, which could be interpreted as normal in appearance by other pathologists. Conversely, findings on a biopsy specimen consistent with what many pathologists may designate as severe IBD, if characterized by infiltration of many lymphocytes in the lamina propria and submucosa, could be a precancerous condition or fully evolved lymphosarcoma. Four cats in this study had evidence of large-intestinal inflammation, consistent with previous observations that IBD in cats is a disease that can affect the entire gastrointestinal tract. Other studies have characterized various forms of colitis in cats.

Results of our studies indicate that clinical signs and ultrasonographic findings are associated with histologic grade of IBD in cats. Although endoscopy will always be a useful tool in identifying inflammation in the gastrointestinal tract, it did not appear to be as dependable as abdominal ultrasonography in the detection of abnormalities of the gastrointestinal tract.

References