Inflammatory Bowel Disease with Concurrent Pancreatitis

PEPPER, A 7-YEAR-OLD, CASTRATED MINIATURE SCHNAUZER, presented with a history of inflammatory bowel disease (IBD) involving the stomach and duodenum for which he had been receiving prednisone at 0.5 mg/kg q48h. Overall, Pepper was doing well, with no ongoing vomiting or diarrhea, but he had been losing weight and previous laboratory work revealed fasting hyperlipidemia. At presentation, Pepper had a 24-hour history of acute bilious vomiting and mucoid diarrhea with hematochezia. Examination revealed a slight fever and cranial abdominal pain. Laboratory abnormalities included an inflammatory leukogram, moderately increased ALP, mild hypercholesterolemia, and considerable hypertriglyceridemia. A Spec cPL (IDEXX) assay was elevated at a concentration consistent with pancreatitis. Abdominal ultrasonography revealed a markedly hypoechoic left pancreatic limb. Working differentials were IBD, likely primary hyperlipidemia, and probable pancreatitis.

Which of the following medications would be appropriate?

Based on the information provided, how would you grade the following drugs and why?

Turn the page and compare your results.

ALP = alkaline phosphatase, IBD = inflammatory bowel disease
**Did you answer?**

The following represents the best responses based on drug metabolism, pharmacokinetics, species, diagnostic differentials, clinical and laboratory data, and other pertinent findings.

**Prednisone**  |  CORRECT RESPONSE
---|---

Prednisone, a steroid with antiinflammatory and immunomodulatory properties, is the drug of choice for IBD, but steroids have long been cited as a possible cause of pancreatitis.¹ Some studies looked mainly at changes in amylase and lipase, however, so it was believed that although steroids were increasing lipase values, they were not necessarily causing pancreatitis.² In fact, there is some debate that steroids may be helpful in certain patients with chronic pancreatitis, particularly those with concurrent IBD. Of note, a recent population-based case-control study in humans suggested that steroids are indeed associated with increased risk for acute pancreatitis.³

**Azathioprine**  |  CORRECT RESPONSE
---|---

Azathioprine, a purine analog immunosuppressant, has been used successfully in the management of IBD.⁴ However, this drug has been implicated as a cause of pancreatitis in humans and would not, therefore, be recommended for this patient.⁵

**Cyclosporine**  |  CORRECT RESPONSE
---|---

Cyclosporine, a calcineurin inhibitor that suppresses the immune system primarily by inhibiting T lymphocytes, has been used in patients with refractory IBD.⁶ Ongoing research at Texas A&M University is investigating its use in dogs with insulin-resistant diabetes mellitus and chronic pancreatitis.⁷ There is some evidence in the human literature that chronic pancreatitis may have an underlying immune-mediated cause, which has also been the proposed etiology in English cocker spaniels afflicted with pancreatitis.⁸ While evidence is insufficient to recommend routine use of cyclosporine in dogs with pancreatitis, transition from prednisone to cyclosporine might be beneficial to control the IBD in this patient, with appropriate vigilance for the many potential drug interactions as characterized by cyclosporine.

**Carprofen**  |  CORRECT RESPONSE
---|---

Steroids and NSAIDs should never be administered concurrently because of the increased risk for GI bleeding, which may be increased further by existing impaired perfusion in the GI tract of patients with pancreatitis.⁹

---

**JULIE ALLEN, BVMS, MS, DACVIM (Small Animal)**, is a medical science liaison for Aratana Therapeutics in Kansas City, Kansas. Previously, she practiced in academic and private specialty settings, in addition to industry (Pfizer Animal Health) and more recently, as internal medicine consultant for both Antech Diagnostics and the Veterinary Information Network (VIN). Dr. Allen’s special interests include GI, hepatobiliary, and endocrine conditions in small animals. She earned her BVMS from University of Glasgow and an MS from Iowa State University, where she also completed internship and residency programs.
Fentanyl

Pain control is very important in the management of pancreatitis. Although traditionally there was concern that opioids induced “spasm” of the sphincter of Oddi, no study or evidence has indicated that fentanyl is contraindicated in patients with pancreatitis.10

Metoclopramide

Metoclopramide, a dopamine antagonist, is both an antiemetic and a prokinetic drug. However, dopamine may actually be helpful in both ameliorating pancreatic inflammation and improving pancreatic perfusion; therefore, the use of metoclopramide may be detrimental.11 In addition, more effective antiemetics are available, including ondansetron, dolasetron, and maropitant. Maropitant may also have beneficial antiinflammatory and analgesic effects because of its actions on substance P.12

Fish oil

Although it may seem counterintuitive in hypertlipidemic patients, fish oil products (particularly those high in omega-3 fatty acids) may reduce serum triglyceride concentrations by decreasing the synthesis of very low-density lipoproteins (VLDLs).13 Studies in humans with ulcerative colitis, Crohn’s disease, and pancreatitis have also suggested that because of their antiinflammatory properties, fish oils may be beneficial, although the results have been controversial. No studies in veterinary medicine have assessed the efficacy of fish oil in patients with IBD or pancreatitis.13-15

Chitosan

Chitosan, a form of fiber derived from shellfish, essentially acts as a fat sponge in the intestinal tract and can therefore be effective in the management of hyperlipidemia. There are no controlled studies evaluating its efficacy, but in general it is considered fairly safe. At high doses, deficiencies of fat-soluble vitamins and minerals may occur.16

IBD = inflammatory bowel disease, VLDL = very low-density lipoprotein
Metronidazole | CORRECT RESPONSE
Metronidazole, a nitroimidazole antibiotic believed to have immunomodulatory properties, has often been used as adjunct therapy for IBD, although one study revealed no difference in response to prednisone alone versus prednisone and metronidazole. Recent studies have suggested that long-term or high-dose use may lead to DNA damage, so courses should be limited. In addition, several case reports in the human literature have suggested that metronidazole may increase the risk for acute pancreatitis.

Enrofloxacin | CORRECT RESPONSE
Although enrofloxacin penetrates the pancreas well, the debate remains whether this drug is beneficial in patients with pancreatitis. Antibiotic coverage for enteric bacteria may be warranted if the patient is febrile, has toxic changes, and/or has evidence of GI mucosal barrier compromise. Infectious complications are rare in dogs as compared with humans. One experimental study in dogs suggested possible improvement in patient survival with antibiotic therapy, but only when given via the cranial mesenteric artery. Human literature wavers as to whether antibiotic therapy benefits these patients. No clinical studies have investigated the effect of antibiotics in dogs with pancreatitis.

IBD = inflammatory bowel disease