APPROACHES TO CASES OF CANINE ACUTE GASTROINTESTINAL DISEASE

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CHRISTINA MAUNDER outlines, in the first of a two-part article, acute scenarios requiring definitive diagnosis, such as foreign bodies and haemorrhagic gastroenteritis

MANY acute gastrointestinal diseases will have a more limited diagnostic approach than chronic gastrointestinal cases, given that – by definition – they are short-lived and often selfresolving episodes.

The main scenarios requiring definitive diagnostics are gastrointestinal foreign bodies or intussusceptions, haemorrhagic gastroenteritis (HGE) and possible infectious gastroenteritis.

• **Foreign bodies or intussusception.** Signalment and history may be suggestive, as these problems are more common in young animals, and certain individuals may have a previous history of foreign body ingestion.

Abdominal imaging (Figure 1) is the most important modality, and focal dilation of the small intestine, a gravel sign or even demonstration of a radio-opaque foreign body may be observed on radiographs. Abdominal ultrasound can be helpful, but small obstructions may be missed; therefore, radiographs should always be obtained.

• **Haemorrhagic gastroenteritis.** This may be seen in dogs of all ages, but is more common in toy and miniature breeds. HGE is characterised by the sudden onset of vomiting and severe bloody diarrhoea. Haematology or a manual packed-cell volume will reveal marked haemoconcentration,

as these dogs lose a relatively greater volume of plasma than red blood cells into the gut lumen. A haematocrit of 60 to 70 per cent may be observed. Total protein levels are normal to low, as plasma proteins also leak into the gut lumen.

• **Infectious gastroenteritis.** Parvovirus may be detected on faecal ELISA in the early stages of clinical disease. Initially, an inflammatory leukogram, and then neutropenia, may also be found on haematology. Reaching a diagnosis is important from an isolation and barrier-nursing perspective.

Detection of faecal *Campylobacter* species and *Salmonella* species is important due to potential zoonotic complications. These infections are more likely in young animals. Any patient with pyrexia, an inflammatory leukogram and haemorrhagic diarrhoea warrants faecal microbiology.

Treatment

Many cases of acute gastrointestinal disease are self-limiting, and supportive treatment with fluid therapy is indicated. In mild cases, oral rehydration may be sufficient. More severe cases will need parenteral fluids via the IV route (intraosseous can be used if IV access cannot be obtained in small puppies). Potassium supplementation may be necessary if the dog is anorexic.

Anti-emetics may be required, but should only be administered if obstructive disease has been ruled out. Feeding a lowfat, highly digestible diet is beneficial, as gastric emptying is improved and faecal residue is reduced, encouraging a resolution of clinical signs.

Acute vomiting and diarrhoea should not be routinely treated with antibiotics. Antibiotics are only indicated if there is:

• haemorrhagic diarrhoea (this implies disruption of the mucosal barrier and may allow translocation of bacteria);

• diarrhoea with pyrexia and/ or an inflammatory leukogram in a young animal, suggestive of sepsis; and/or

• a positive culture for *Salmonella* or *Campylobacter* in a dog with systemic signs. For the more severe cases discussed above, specific aspects may need to be addressed.

• **Foreign body or intussusception.** These are surgical conditions (Figures 2 and 3), but may need appropriate stabilisation pre-operatively. Acid-base status may be altered if vomiting has been profuse. In particular, patients with upper gastrointestinal obstructions can lose large volumes of fluid containing hydrogen ions, and develop metabolic alkalosis and marked hypovolaemia. Sequestration of fluid in the intestines from a more distal obstruction can result in electrolytes accumulating in the fluid and decreased serum levels of potassium, sodium and chloride. Aggressive fluid therapy may be necessary, along with supplementation with potassium chloride as

appropriate (dose rates are readily available, such as via the BSAVA Small Animal Formulary).

• **Haemorrhagic gastroenteritis.** These patients require aggressive fluid therapy to address hypovolaemia secondary to plasma loss. Once fluid resuscitation has been achieved, serum protein levels may drop to very low levels. Colloidal support (synthetic colloids or fresh frozen plasma) may be necessary to prevent peripheral oedema or effusions. Parenteral broadspectrum antibiotics (such as intravenous amoxicillin-clavulanic acid plus metronidazole) are indicated given the haemorrhagic nature of the diarrhoea.

• **Infectious gastroenteritis.** These patients require isolation, barrier nursing and intensive care. The administration of intravenous fluid therapy is mandatory, along with intravenous broad-spectrum antibiotics and anti-emetics. Gastroprotectants and antacids may also be indicated. Microenteral nutrition can improve survival. Even 0.25ml/ hour constant-rate infusions via enteral feeding tubes, or 1.0ml/ kg to 4ml/kg every few hours, can help sustain enterocyte health and function and promote recovery. Enteral fluid formulations containing glutamine may be beneficial, and support enterocyte health and function.

Nutrition provision as early as possible is important and, therefore, good control of nausea and vomiting is essential.

Gastrointestinal drugs

• **Anti-emetics.** Maropitant (Cerenia; Pfizer Animal Health) is the only licensed product, and acts centrally on neurokinin-1 receptors. The drug is in injectable form (1.0mg/kg, subcutaneously every 24 hours).

Once vomiting stops, tablets can be administered orally at a dose of 2mg/kg per os once daily. Daily administration of maropitant (either orally or parenterally) can be continued for five days, and then a 48-hour washout period is needed due to accumulation of the drug within the body.

Metoclopramide is an unlicensed drug. In severe cases of nausea and vomiting, this may be necessary as well. It has the advantage of a prokinetic effect, but may be more effective when given as a constant-rate infusion in intravenous fl uid therapy (1.0mg/kg/24 hours as an antiemetic, 2mg/kg/24 hours for a prokinetic effect).

• **Gastroprotectants.** These may be used to protect the gastric mucosa in cases of gastric ulceration. Cimetidine (Zitac; Intervet) is licensed for canine use, and administered at a dose of 5mg/kg to 10mg/kg per os two to three times daily, and acts as an H2 receptor antagonist.

Ranitidine is unlicensed, but is available as an IV formulation. It has additional prokinetic effects, and the dose is 2mg/kg per os or IV bid or tid.

Omeprazole is a human proton-pump inhibitor that may be used in cases of severe gastric ulceration. A dose of 0.5mg/ kg to 1.5mg/kg IV or per os sid can be used.

Sucralfate oral suspension is another human drug that binds to ulcerated sites, and acts as a barrier to gastric acid and pepsin. However, it also binds refl uxed bile acids, stimulates endogenous prostaglandin synthesis and stimulates wound healing via epidermal growth factor. The dose depends on the size and severity of the lesions – 500mg per os tid or qid (less than 20kg) and 1.0g to 2g per os tid or qid (more than 20kg) is recommended.

Antidiarrhoeals

Absorbents and protectants are designed to bind toxins and excess water, and protect the mucosa. Several formulations are available, such as kaolin and pectin; activated charcoal; and montmorillonite.

Opioids act to increase segmentation and decrease peristalsis. They also have an antisecretory effect. Diphenoxylate at 0.05mg/kg to 0.1mg/kg per os tid or qid, and loperamide 0.04mg/kg to 0.2mg/kg per os bid or tid, are examples of opioid drugs. The use of loperamide in collies or dogs that may be ivermectin-sensitive is contraindicated – the mutation in the multidrug resistance gene allows the drug to penetrate the central nervous system.

Antispasmodics may be helpful for dogs experiencing excessive straining – examples include hyoscine at 0.5mg/kg per os bid or mebeverine (peppermint oil).

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