

CANINE GASTRIC DILATATION-VOLVULUS

Part 2 – On-Going Resuscitation/Diagnostics

Fax Continuing Education Series – Animal Emergency Center

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Analgesics

GDV is presumably a very painful experience, reflected by tachycardia, vocalization, and tensing of the abdomen. Administration of injectable opioids generally provides some relief and acts as a premedication in anticipation of surgery. Oxymorphone (0.1 mg/kg) or hydromorphone (0.1-0.4 mg/kg) can be administered IV, or morphine (0.5-1 mg/kg) can be administered IM or by slow IV injection to avoid hypotension. The partial agonists/antagonists such as butorphanol and buprenorphine may not provide adequate analgesia for this type of injury and impending surgical intervention. Analgesia can be augmented with the use of benzodiazepines and low-dose ketamine infusion. Nonsteroidal anti-inflammatory agents should be used with extreme caution since gastric blood flow is compromised in the GDV patient.

Glucocorticosteroids?

Glucocorticosteroids are phospholipase A₂ inhibitors (PLA₂). They prevent the release of arachidonic acid from binding sites, decreasing release of proinflammatory cyclooxygenase byproducts. Corticosteroids also decrease white blood cell marginization. Proof of its benefits during GDV resuscitation is lacking. In a model of canine intestinal ischemia, PLA₂ blockers did not significantly eliminate tissue injury; however there was a tendency toward less pronounced tissue injury when methylprednisolone was used. High doses have been recommended (methylprednisone 30 mg/kg or dexamethasone 4 mg/kg), however can lead to risks of side-effects of gastrointestinal ulceration and immunosuppression. In a preliminary retrospective study evaluating the use of corticosteroids in GDV patients, mortality was greater in those receiving corticosteroids. (Ellison, Rudloff, Kirby, in progress) The authors do not currently administer corticosteroids at high doses unless the patient is undergoing corticosteroid therapy for a preexisting condition. If administered, they should be given some fluids have been administered and prior to gastric decompression.

Gastric Decompression

Percutaneous trocharization of the stomach after initiation of aggressive fluid resuscitation provides immediate release of some gas and fluid, and provides immediate pain relief with less anxiety. This also relieves compression of the diaphragm by the distended stomach and can allow better ventilation. The lateral abdominal wall is percussed and the area sounding most tympanic/resonant is trocharized – trying to go as anterior towards the ribs as possible. Risks associated with trocharization include puncture of intra-abdominal organs, especially the spleen, which can be malpositioned due to GDV. This method of relief does not work with food-bloat.

Complete gastric emptying prior to surgery is not warranted nor advised. Immediate surgical intervention after resuscitation is preferred so that the gastric wall can be palpated and visualized as the orogastric tube is placed. For catastrophic cases that are dying before your eyes, or when immediate surgery is not possible, naso- or oro-gastric intubation can be attempted. There is a risk of gastric rupture with a severely necrotic stomach. Tube passage is not always possible, and passage does not guarantee derotation. Light anesthesia and tracheal

intubation during orogastric tube placement and lavage can reduce the risk of aspiration and the effects of anxiety and pain associated with the procedure.

Managing systemic complications

Continuous ECG evaluation should be part of the resuscitation process. Any auscultable or ECG dysrhythmia should be initially treated with supplemental oxygen and analgesics. Acid-base and electrolyte (potassium, calcium and magnesium) abnormalities should be evaluated and corrected through fluid and oxygen therapy. When arrhythmias are sustained and associated with poor perfusion, antiarrhythmic medication is administered. The most common dysrhythmia treated in the GDV is ventricular tachycardia, and lidocaine is administered IV up to 4 mg/kg slow bolus. If this improves the rhythm, then a 50 mcg/kg/min CRI is started. Continuous ECG monitoring is required. Underlying cardiomyopathy is a consideration in large breed dogs and an echocardiogram is recommended, time permitting.

Preoperative broad-spectrum antibiotics such as a first generation cephalosporin or ampicillin (20 mg/kg IV) should be administered as the patient is being prepared for surgery. Once the abdominal exploratory has been performed, antibiotics selecting anaerobes or resistant gram-negative organisms may be added as indicated, but are rarely required.

Diagnostics

The history of non-productive vomiting and physical findings of a distended anterior abdomen are often the leading diagnostic indicators of GDV. It is beneficial, however, to confirm the diagnosis and evaluate for other complications or problems with radiographs. Radiographs *are not* to be taken until fluid resuscitation and temporary decompression have been initiated, unless euthanasia is directed by the owners if GDV is present. Abdominal radiographs confirm rotation with the classic "shelf" sign, where the pylorus is displaced dorsally and to the left. A single survey lateral thoracic radiograph is helpful in identifying underlying pulmonary disease, possible cardiomyopathy, and evaluating the size of the caudal vena cava to assess success of volume resuscitation. A megaesophagus can result from GDV and requires close monitoring. If there is no relief of the megaesophagus after gastric derotation, then a nasoesophageal tube may be required post-operatively for decompression of the esophagus and to minimize the potential regurgitation and aspiration associated with this complication. Radiographs should not delay surgical preparation.

