

GDV Syndrome

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Introduction

Gastric dilatation and volvulus is a life threatening condition that involves a complex series of pathological events. These events are initiated by varying degrees of malposition of the stomach and rapid accumulation of gas and fluid within the stomach which is prevented from being expelled. Rotation of the stomach reduces gastric blood flow by 75% and decreases venous return to the heart resulting in circulatory shock. This is compounded by fluid sequestered in the dilated stomach which is unavailable for intestinal absorption contributing to the hypovolemic shock. This results in ischemia especially of the stomach, bowel and heart. Loss of the gut mucosal barrier predisposes the patient to septicaemia and endotoxemia. Anoxia of cardiac muscle results in cardiac dysfunction manifest as arrhythmias.

The aetiology of the condition is still unknown, but predisposing factors include:

- * Breed, especially the Great Dane, Weimaraner, St Bernard, Irish Setter, Gordon Setter and Standard Poodle
- * Conformation / Anatomy
- * Stress
- * Diet
- * Gastric Dysfunction
- * Gastrointestinal Inflammatory Disease
- * Oesophageal Dysfunction

History and Clinical Signs

Typical clinical signs include ptyalism, retching with the inability to vomit, abdominal distension and restlessness. These signs are not necessarily associated with a recent meal and or exercise. Physical findings may include weak, rapid peripheral pulses, abnormal mucous

membrane colour, decreased capillary refill time, tachypnea and abdominal tympany. Occasionally animals can present with chronic GDV with intermittent mild bloating and occasional vomiting / retching.

Diagnosis

Radiographs taken in right lateral recumbency are important in differentiating gastric dilatation from gastric torsion. With gastric dilatation the pylorus will be in the mid ventral position and the fundus in the mid dorsal position. With gastric volvulus the gastric pylorus is displaced dorsal to the gastric fundus giving the so called “double bubble” appearance.

Treatment

Treatment is aimed at reversing the pathophysiological effects of the condition. This can be divided into the treatment for shock and its effects on body organs; decompressing the stomach and surgical exploration to untwist the stomach and to permanently anchor it into a normal position to prevent future recurrence (Pexy).

Fluids are administered by placement of two large bore (16 gauge) needles in the cephalic or external jugular veins. Fluids should be given at 90mls/kg for the first hour then adjusted depending on the cardiac response. Blood should be obtained for an immediate PCV, TS, glucose and urea nitrogen. Ideally electrolytes should be run. Abnormalities in coagulation have been recorded in 2/3 patients and include combinations of reduced platelets and elevated PT / PTT / FSP. Coagulation panels should be run if available.

New fluid regimes include the use of hypertonic saline (7% NaCl) in 6% dextran 70 (5ml/kg given over 5 minutes) followed by iv administration of isotonic fluids. When the HSDS is infused the hypertonicity pulls interstitial fluid into the circulation very rapidly and effectively. The advantages of HSDS is the small volume required thereby allowing rapid infusion. Contraindications include evidence of coagulopathy.

Antibiotics should be given due to the high incidence of gut mucosal injury and risk of septicaemia.

Corticosteroids are used to stabilise lysosomal membranes and capillary endothelium. They are most effective when given very early in the course of the condition.

Recent interest has also focussed on the use of agents to reduce the effects of reperfusion injury. This occurs when ischemic tissue is reperfused and there is release of oxygen derived free radicals which induce peroxidation of lipid cell membranes thereby causing cellular damage, destruction of enzymes and damage to DNA. In an *experimental study* of GDV Desferoxamine (Desferal @ 0.25-0.5mg/kg im), an iron chelator, improved survival rates in animals in which it was used.

Gastric Decompression

This can be achieved by orogastric intubation using a soft plastic tube of about 1 inch diameter. In cases of severe volvulus percutaneous gastrocentesis may be necessary using a 14 or 16 gauge needle placed at the area of maximum distension.

Surgery

The goals of surgery are to correct gastric displacement, inspect gastric viability and to prevent further recurrence.

Most cases of GDV occur with rotation of the stomach in a clockwise direction and can be recognised at surgery by the omentum covering the ventral surface of the stomach. The pylorus is pulled ventrally from the left side of the body wall to the right.

Evaluation of Gastric Wall Viability

GDV results in severe vascular compromise especially affecting the cardia and ventral area of the fundus due to stretching and tearing of the short gastric vessels. Clinical criteria are most useful in evaluating gastric wall viability. Non-viability is indicated by excessive thinning of the wall, green/grey serosal surface, lack of haemorrhage from cut surfaces. Intravenous fluorescein dye has also been evaluated but can give false negatives. Gastroscintigraphy has been used to assess functional gastric mucosa post surgery with an 80% accuracy.

The mortality rate for GDV has been reported to be as high as 60% if gastric resection is indicated and reflects the severity of the condition. Early surgical intervention is associated with increased survival rates.

Gastropexy

In cases in which the stomach is not pexed to the body wall the recurrence rate of GDV can be as high as 75%. With gastropexy this can be reduced to about 5-10% depending on the technique. Many techniques exist for pexing the pylorus of the stomach to the right body wall most work well when performed by an experienced surgeon. The most popular types of gastropexy include tube gastrostomy, incisional gastropexy, circumcostal gastropexy and the belt loop gastropexy. Appositional gastropexy might not form an adequate adhesion.

Questions regarding this or on any other veterinary related matter must be discussed with your veterinary surgeon. The information contained herein is of a general nature only and may not relate to the specific conditions exhibited by your pet. Specifics of each case must be discussed with your veterinary surgeon. For further information, fact-sheets for clients and articles for veterinary surgeons, contact <http://members.aol.com/opvet>