



HAEMORRHAGIC GASTROENTERITIS

What is Haemorrhagic Gastroenteritis?

Haemorrhagic Gastroenteritis also known as HGE is a very sudden (known as “peracute”) bloody inflammation of the intestines (known as “haemorrhagic enteritis”) of dogs, characterized by a sudden onset of severe bloody diarrhoea that is often explosive; the dog also has vomiting (therefore, the disease is named “haemorrhagic gastroenteritis”), low circulating blood volume (known as “hypovolemia”), and marked increase in the percentage volume of red blood cells as compared to the fluid volume of blood (known as “hemoconcentration”) due to a dramatic loss of water and electrolytes (chemical compounds, such as sodium, potassium, chloride, necessary for the body to function) into the intestinal lumen.

All breeds of dog can be affected, but the incidence is greater in small-breed dogs; breeds most represented include Miniature Schnauzers, Dachshunds, Yorkshire Terriers, and Miniature Poodles.

What causes it?

- Unknown
- Type 1 hypersensitivity reaction (immune reaction) directed against the dog's intestinal lining
- Bacterial cultures of some dogs with haemorrhagic gastroenteritis yield mostly pure cultures of a bacteria, *Clostridium perfringens*, and its related intestinal poison (known as an “enterotoxin”), but the significance of these findings is unknown
- Searches for poison-producing (known as “toxigenic”) *E. coli* strains have been unrewarding, but it is possible that toxigenic *E. coli* may be involved in some pets

Clinical Signs

- Clinical signs are variable in both the course and severity of the disease; the disease usually is very sudden (peracute) and associated with shock due to low circulating blood volume (known as “hypovolemic shock”)
- Most pets affected have been healthy prior to having signs, with no historical environmental changes or other ongoing disease involving the stomach and/or intestines
- Signs usually begin with sudden (acute) vomiting, lack of appetite (known as “anorexia”), and depression that then is followed by watery diarrhoea, quickly changing to bloody diarrhoea

- Signs progress rapidly and become severe within a period of hours (usually 8-12 hours) and are the result of shock due to low circulating blood volume (hypovolemic shock) and marked increase in the percentage volume of red blood cells as compared to the fluid volume of blood (hemoconcentration) due to a dramatic loss of water and electrolytes (chemical compounds, such as sodium, potassium, chloride, necessary for the body to function) into the intestinal lumen
- The pet generally is depressed and weak and has prolonged capillary refill time (that is, the pink colour of the gums is slow to return when the gums are blanched by finger pressure) and weak pulse pressure
- Skin turgor (turgor is the normal fullness or tension of tissues resulting from fluid content) may appear normal due to the very sudden (peracute) nature of the disease and the lag time in body fluids moving from the skin tissues into the central organs (known as “compartmental shifts”), so that the skin turgor does not reflect the pet's dehydration
- The abdomen may be painful when the veterinarian feels it (known as “abdominal palpation”) and may feel fluid-filled intestines
- Rectal examination will identify bloody diarrhoea, and later in the course of disease, a “raspberry jam” characteristic stool develops
- Occasionally fever, but often body temperature is normal or even subnormal

How is it Treated?

Healthcare

- Pets suspected of having acute hemorrhagic gastroenteritis should be hospitalized and treated aggressively, because clinical deterioration is often rapid and can be fatal
- Rapid fluid-volume replacement is required
- Intravenous (IV) fluids containing balanced electrolyte solutions are given rapidly until the packed cell volume (PCV, a means of measuring the percentage volume of red blood cells as compared to the fluid volume of blood) is less than 50%; electrolytes are chemical compounds (such as sodium, potassium, chloride) necessary for the body to function

- A moderate rate of maintenance fluids is given to maintain circulatory function and to correct any potassium or other electrolyte deficits during the recovery period
- Continued body-fluid losses through the stomach (by vomiting) or intestines (by vomiting and/or diarrhoea) should be estimated and that volume added to the fluid requirements
- Pets with low levels of protein in their blood (known as “hypoproteinaemia”) may require treatment with colloids or plasma; colloids are fluids that contain larger molecules that stay within the circulating blood to help maintain circulating blood volume, examples are dextran and hetastarch

Diet & Activity

- Keep exercise and activity restricted.
- No food or drink by mouth (known as NPO) during acute disease.
- During recovery period, feed a bland, low-fat, low-fibre diet for several days before returning to the normal diet.

What medications are available?

- Injectable antibiotics are given because of the potential for the spread of bacteria and their poisons in the blood (known as “blood poisoning” or “septicemia”) and possible implications of the bacteria, *Clostridium perfringens*, being involved in the disease; ampicillin is recommended
- Alternate antibiotic choices include trimethoprim-sulfa or cephalosporins; ampicillin in combination with a fluoroquinolone (such as, enrofloxacin) is suggested in cases of suspected septicemia
- Short-acting steroids have been suggested by some, reasoning that a hypersensitivity reaction may be involved; for example, dexamethasone sodium phosphate
- Excessive blood loss may require a blood transfusion (rare)
- Antibiotics by mouth and intestinal protectants are of little benefit, and generally not administered
- Rectal administration of agents to protect the lining of the intestines (known as “mucosal protectants”) is of questionable value
- Drugs to control vomiting (known as “antiemetics”) may be given for severe vomiting
- Drugs that change the motility of the intestines (known as “intestinal motility modifiers”) are not considered necessary and are not recommended

Possible Complications

- Occasionally a blood-clotting disorder (known as “disseminated intravascular coagulopathy” or DIC) may develop
- Nervous system signs or even seizures may occur secondary to “sludging of the blood”—the very high percentage volume of red blood cells compared to the fluid volume of blood (hemoconcentration) makes it difficult to move the blood through the blood vessels
- A haemolytic-uremic syndrome (a syndrome in which the red blood cells break down [known as “haemolysis”] and excess levels of urea and other nitrogenous waste products build up in the blood [known as “uraemia”]) may occur—rare
- Irregular heartbeats and rhythms may occur from suspected myocardial reperfusion injury (a condition that may occur when the heart has had poor blood flow or circulation with low levels of oxygen and then the blood flow and oxygenation is restored; the previously oxygen-starved heart muscle may release high levels of free radicals, which causes more heart muscle tissue damage; blood flow is known as “perfusion” and the reestablishment of blood flow is known as “reperfusion”)

Follow up care & Prognosis

It is important to monitor the packed cell volume (a means of measuring the percentage volume of red blood cells as compared to the fluid volume of blood) and total solids (a quick laboratory test that provides general information on the level of protein in the fluid portion of the blood) frequently (at least every 4-6 hours). Modify fluid replacement based on PCV, continued fluid losses from the stomach and/or intestines, and circulatory function. If clinical improvement is not seen in 24-48 hours, re-evaluate the pet, as other causes of haemorrhagic diarrhoea are probable.

The course of the disease is generally short, lasting from 24 to 72 hours. Prognosis is good, and most pets recover with no complications. Fewer than 10% of treated dogs die; 10-15% of dogs will have recurrences of haemorrhagic gastroenteritis. Death rates can be high in untreated dogs but sudden death is uncommon. Recurrence is reported in about 10-15% of affected dogs.