



A Monthly e Magazine
ISSN:2583-2212

July, 2023; 3(07), 1421-1425

Popular Article

Foreign Bodies Induced Gastritis in Dogs

Varun Kumar Sarkar¹, Pooja Solanki², Rajashekhar Kamalla¹, Harshit Saxena and Vandana¹
PhD Scholar, Division of Medicine, ICAR-IVRI, Izzatnagar, Bareilly (UP)
<https://doi.org/10.5281/zenodo.8156755>

Abstract

Foreign bodies-induced gastritis is the most common cause of gastritis in dogs mainly in younger aged dogs. It causes direct insult of gastric mucosae or reaction to endogenous substances of body and foreign bodies like sewing needles, lead to the formation of granulomas in the gastric mucosa. The classical clinical sign of foreign body gastritis is acute vomiting, hematemesis, and abdominal pain. The diagnosis of foreign bodies is made by radiography, ultrasonography, and endoscopy, however, granulomatous gastritis due to foreign bodies can be best diagnosed by histopathology. The treatment of foreign bodies includes direct removal of foreign bodies by means of induction of vomiting with apomorphine, by Heimlich maneuver technique, by endoscopic foreign bodies removal, and lastly by surgical intervention with supportive therapy like administration of gastric protectant and antacids like proton pump inhibitors and histamine-2 receptor antagonist.

Introduction

One of the most frequent surgical issues in dogs is the presence of gastric foreign bodies (FB). Dogs frequently experience gastric FB, which is more frequently observed in younger animals (Amorim *et al.*, 2016). Most often, it results in direct physical damage to the gastric mucosa, which causes obstruction, gastric ulcers, and gastritis (Bhuvaneshwari and Madeena Begum, 2018). A FB that blocks the pyloric area of the stomach causes the onset of acute clinical symptoms, but if it remains in the stomach, it might cause mucosal damage and acute gastritis. (Patel *et al.*, 2018). In granulomatous gastritis, granulomas may develop in the canine stomach mucosa as a result of FB such as sewing needles. Endoscopy and radiographic studies are the most accurate diagnostic methods for radiopaque and radio-dense FB, respectively.



Etiology

Foreign bodies, such as sewing needles, balls, foam, rubber toys, carpets, mango pits, socks, fabrics, purse handles, shoelaces, tennis balls, coins, etc can cause foreign bodies induced gastritis (Zersen *et al.*, 2020).

Pathophysiology

The gastric mucosal layer serves as an effective barrier against acidity, microbes, detergents, and changes in luminal temperature. Gastrointestinal secretion, which comprises acid, mucus, bicarbonate, and antibacterial compounds, serves as the gastrointestinal wall's first line of defense. The stomach mucosal layer and the epithelial layer on the wall of the gastric glands both protect against acid reflux and are quickly restored after damage. In order to maintain the integrity of the gastrointestinal mucosa, remove toxic substances, and restore the gastric epithelial layer, rapid response was shown through the gastric mucosa by activation of neurohormonal and inflammatory signals to the stomach microvasculature.

When FB stimulates the stomach wall, neutrophils, mast cells, platelets and endothelial cells that produce inflammatory and vasoactive chemicals. Interleukin (IL)-1b, IL-2, IL-6, IL-8, and tumor necrosis factor-alpha are a few proinflammatory cytokines that are generated in response to the cause of peptic ulcers. IL-1 reduces the degree of gastroduodenal injury and increases resistance to gastric injury. The risk of gastritis, stomach erosion, ulceration, hypoxia, haemorrhage, edema, and necrosis continue to rise as a result of these inflammatory cytokines that stimulates acid secretion and mucosal disintegration and increase the permeability of the epithelial layer. Transient ulceration is frequently noticed due to direct damage of the gastric wall and mucosal barrier or generally ingestion of a wide range of FB like coarse foods, chemicals, plant materials, clothes, etc. The outcome of a reaction to endogenous cytokines and FB, can lead to the formation of granulomas in the gastric mucosa (Pratt *et al.*, 2014).

Clinical Findings

Clinical findings include vomiting, hematemesis, melena, retching, belching, excessive salivation, abdominal distention, and stomach discomfort. Weight loss, tiredness, and diarrhea were also seen in addition to vomition and anorexia (Singh *et al.*, 2018).



Diagnosis

History and clinical signs

Consumption of FB such as coarse food items, contents of vomitus such as bile, food, froth, blood (fresh or digested), or indications of ingestion (such as grass, bones etc.). Acute or persistent vomiting with or without hematemesis, diarrhea, gradual weight loss, fatigue, and anorexia is the most typical clinical symptom of a FB-induced stomach ulcer.

Diagnostic imaging

Radiography

Plain and contrast radiographs can be helpful in identifying the potential cause of abdominal disturbances (gastric FB), but they may not be accurate enough to accurately confirm gastric ulceration. Radiographic abnormalities include loss of serosal details and increased soft-tissue opacity inside the stomach lumen indicative of either a mass or a FB (Vaughn *et al.*, 2014).

Ultrasonography

For the detection of stomach lesions in dogs, ultrasonography is more accurate than radiographic examination. Ultrasonography is used to detect FB and masses, identify GI perforations, and occasionally suggest the need for surgery. Complete abdominal ultrasonographic examination using 5, 7.5, and/or 10 MHz transducers has been carried out on dogs of all ages. Gastric lesions are judged based on the thickness of the gastric wall, the layering of the gastric wall, and the contents of the stomach lumen.

Endoscopy

Flexible endoscopy, which enables direct visualization of the gastrointestinal tract lumen, has completely changed the approach to diagnosis. Endoscopy has been shown successful in removing FB without the need for surgery (Singh *et al.*, 2018).

Histopathology

From a histological perspective, the granulomatous lesions are composed of characteristic nodular, confined macrophage collections mixed with varying numbers of lymphocytes, eosinophils, multinucleated giant cells, and neutrophils, with or without central necrosis and a peripheral lymphoid cuff (Amorim *et al.*, 2016).

Treatment Induction of emesis

Apomorphine was given to dogs @ 0.02 - 0.05 mg/kg (Zersen *et al.*, 2020).



Heimlich maneuver technique

The method entails eating a substantial meal, using an emetic to induce vomiting, and applying pressure on the belly while vomiting. In the event of failure, other options are "wait-and-see," endoscopic extraction, or gastrostomy (Duperrier-Simond *et al.*, 2018).

Endoscopic foreign body removal

Snare the FB and drag it up near the endoscope tip to remove it. If the item is still difficult to pull out of the esophagus, run the flexible endoscope through a bigger diameter rigid endoscope or rubber tube (over tube). Pull the FB up to the tip of the endoscope once more. Pass the over tube down the flexible scope with care until it enters the stomach. Then, cautiously draw the flexible scope (with the FB as near to the tip as feasible) as far into the over tube as possible, until the object is up against the over tube's end. The bigger diameter over tube dilates the lower esophageal sphincter further, making it simpler for the item to pass through the sphincter. At the same time, remove the scope, over tube, and FB. This procedure is also excellent for removing things with sharp edges such as glass, razor blades, and safety pins from the cricopharyngeal sphincter (Mourya *et al.*, 2018).

Surgical Removal

Midline celiotomy from the caudal xiphoid to the umbilicus, as well as gastrotomy can be performed to remove FB such as food packaging plastic bags, phytobezoars, and bone fragments.

Supportive therapy

Sucralfate - Sucralfate @ 0.5-1 g PO Q 8–12 hours (tablet or slurry) administered at least two hours before or after other prescriptions to protect gastric mucosa from acid damage.

Famotidine & Ranitidine- Ranitidine and famotidine are histamine-2 (H₂)-receptor antagonists that competitively prevent histamine release by gastric parietal cells. Famotidine @ 1 mg/kg PO or IV Q 12 H and ranitidine @ 1 mg/kg PO Q 12 hours can be administered.

Omeprazole & Pantoprazole - Proton pump inhibitors like (omeprazole @ 1 mg/kg PO Q 12 H and pantoprazole @ 1 mg/kg IV Q 24 H) permanently reduce the amount of acid produced by the stomach parietal cells (Lawrence and Lidbury, 2015).

Conclusion be easily managed by removal of foreign bodies by induction of emesis or by surgical intervention. Foreign bodies gastritis is mainly encountered in young aged dogs and it can



be fatal if sharp foreign bodies penetrate the gastric mucosae and damage other internal organs, whereas, it can

Reference

- Amorim, I., Taulescu, M.A., Day, M.J., Catoi, C., Reis, C.A., Carneiro, F. and Gärtner, F., 2016. Canine gastric pathology: a review. *Journal of comparative pathology*, 154(1), pp.9-37.
- Bhuvaneshwari, V. and Begum, M.M., 2018. Multiple Gastric Foreign Bodies in a Dog and its Successful Surgical Removal. *Indian Vet. J*, 95(02), pp.58-59.
- Duperrier-Simond, C., Roux, F. and Deschamps, J.Y., 2018, September. Induced vomiting in conjunction with the “Heimlich maneuver” for gastric foreign body extraction in dogs: 100 cases. In *IVECCS* (p. np).
- Lawrence, Y. and Lidbury, J., 2015. Symptomatic management of primary acute gastroenteritis. *Today's Veterinary Practice*, 5(6), pp.46-52.
- Mourya, A., Mehta, H.K., Gupta, D.K., Singh, B., Tiwari, A., Shukla, P.C., Sheikh, A.A. and Bhagat, R., 2018. Gastrointestinal Fiberscopy in dogs: A review. *Journal of Entomology and Zoology Studies*, 6(2), pp.2330-2335.
- Patel, Pankaj Kumar, et al. "Gastritis and Peptic Ulcer Diseases in Dogs: A Review." *Int. J Curr. Microbiol. App. Sci* 7.3 (2018): 2475-501.
- Pratt, C.L., Reineke, E.L. and Drobatz, K.J., 2014. Sewing needle foreign body ingestion in dogs and cats: 65 cases (2000–2012). *Journal of the American Veterinary Medical Association*, 245(3), pp.302-308.
- Singh, A.K., Malik, V. and Pandey, R.P., 2018. Clinical studies on upper gastro-intestinal endoscopy in dogs. *Indian Journal of Veterinary Surgery*, 39(2), pp.130-135.
- Vaughn, D.P., Syrcle, J. and Cooley, J., 2014. Canine giant hypertrophic gastritis treated successfully with partial gastrectomy. *Journal of the American Animal Hospital Association*, 50(1), pp.62-66.
- Zersen, K.M., Peterson, N. and Bergman, P.J., 2020. Retrospective evaluation of the induction of emesis with apomorphine as treatment for gastric foreign bodies in dogs (2010-2014): 61 cases. *Journal of Veterinary Emergency and Critical Care*, 30(2), pp.209-212.

