

RADIOGRAPHY: A TOOL FOR THE DIAGNOSIS OF GASTROINTESTINAL AFFECTIONS IN CHRONIC VOMITING DOGS

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Thirty dogs presented with a history of chronic vomiting which did not subside after symptomatic medical management were included in the study. In all the dogs, clinical examination showed varying degrees of gastrointestinal involvement. All the animals were subjected for radiography to diagnose the cause of vomiting. Survey radiography aided and enabled in the diagnosis in 27/30 dogs with gastrointestinal affections as megaesophagus, gastrointestinal foreign bodies, gastric dilation and volvulus, intussusception and megacolon. Accurate diagnosis helped to adopt standard protocols for the management of the conditions. Radiography proved to be a good and primary diagnostic tool for the detection of most of the gastrointestinal affections and helped in the selection of appropriate treatment modality.

Introduction

Gastrointestinal disorders are the most common condition in dogs and are predominantly manifested as acute vomiting. However, they pose a diagnostic and therapeutic challenge (Washabau, 2003). The etiology for vomiting is of utmost importance for the selection of appropriate therapy (Sharma *et al.*, 2011). Ingestion of various foreign bodies like bones, choke belts, fruit pits, stones, plastics, toys, fish hooks, sewing needle and bottle caps were reported to cause gastrointestinal obstruction in dogs (Mahesh *et al.*, 2008). Diagnostic radiography can be considered as the primary imaging technique for the evaluation of gastrointestinal affections (Kleine and Lamb, 1989). Also, radiography is a useful diagnostic tool that reveals intestinal ileus (Hedlund and Fossum, 2007) with the equipment easily available (Rose and Neiger, 2013). But with the advent of new imaging methods like ultrasonography and endoscopy (Roth *et al.*, 1990), the importance of radiography in diagnostic imaging of gastrointestinal tract is diminishing. The present study was designed to evaluate the use of survey and contrast radiography for the diagnosis of gastrointestinal affections in vomiting dogs not responding to symptomatic medical treatment.

Materials and Methods

Thirty dogs presented to the Teaching Veterinary Clinical Complex, Mannuthy between May 2013 and November 2013 with history of persistent vomiting irrespective of

symptomatic medical management were selected for the study. Details of history were collected and, clinical examination, physical examination and haematological examination were carried out. All the animals were subjected to radiographic evaluation, both survey and contrast radiography depending on the condition, of the gastrointestinal tract.

The radiographs revealed change in opacities of the organs. Metal opacities were noticed in the gastric and intestinal segments, gas opacities in distended stomach, intestinal loops and colon, metal opacity with barium swallow retained in the oesophageal portion and gastric pyloric region. Change in position and size of the organs were visualized in some of the radiographs where there was distention of stomach deviated from its normal area. The function of the intestinal tract was also assessed and at times, revealed the accumulation of barium meal. Based on the roentgen signs, the conditions were diagnosed as megaesophagus, gastrointestinal obstruction by intraluminal foreign bodies, gastric dilation and volvulus, and megacolon, and appropriate treatment approaches were adopted.

All the conditions were treated following the standard protocols. The animals subjected for surgical intervention was first pre-operatively stabilized using 5% dextrose normal saline and the procedures were performed under general anaesthesia.

Exploratory laparotomy was adopted for the management of gastrointestinal obstruction by intraluminal foreign bodies. Gastrotomy, enterotomy and enterectomy with

enteroanastomosis were adopted depending on the site of the foreign body and the viability of the affected segment. The foreign bodies were identified as granite stone, arechanut, cotton pad, plastic cover, faecoliths, sewing needle in gastric pylorus and mango kernels. Gastric dilation and volvulus was treated with oral decompression, gastrotomy and gastropexy.

Postoperatively, the animals were administered with 5% dextrose normal saline and Inj. Ceftriaxone at the dose rate of 20mg/kg body weight intravenously. The therapy was continued for six more postoperative days. Withdrawal of food for 72 hours was advised to the owners and the animals were maintained on parenteral administration of 5% dextrose normal saline and Ringer's lactate for the first three days post-surgery. Owners were advised to feed liquid diet and provide water for the animals from fourth postoperative day and solid food from eighth postoperative day.

Results and Discussion

The etiologies of vomiting are umpteen and the decision to perform diagnostic tests in vomiting dog is based on many factors (Rose and Neiger, 2013). Chronic vomiting, loss of gastric secretions and electrolyte imbalance are the manifestations of severe damage of gastrointestinal mucosa. It is reported that 95% of animals suffering from vomiting are not presented to the veterinarian (Rose and Neiger, 2013).

The animals affected were aged between four months to three years. Radiography performed in 30 animals assisted and enabled a diagnosis in 27 dogs: megaesophagus (n=7), gastric dilation and volvulus (n=2), gastrointestinal foreign body (n=12), intussusception (n=1) and megacolon (n=5).

Fig. 1. Radioopaque foreign bodies at various sites of gastrointestinal tract



Fig.2. Radiolucent foreign body at the gastric pyloric region (contrast radiography)

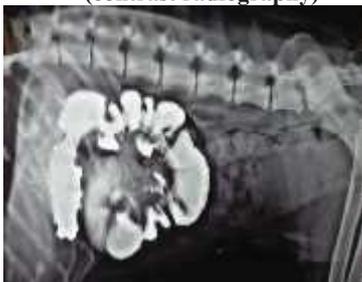


Fig.3. Gas filled distended stomach due to concurrent Splenomegaly

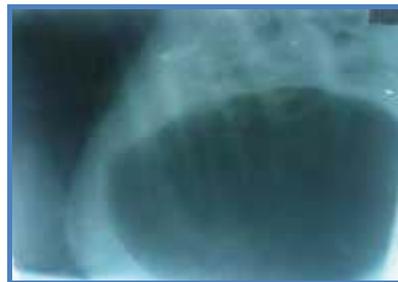
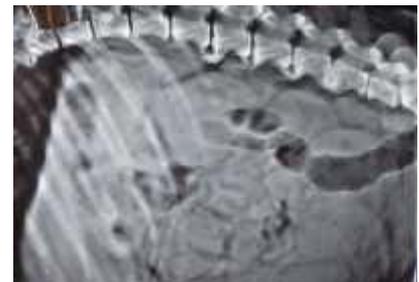


Fig.4. Dilated colon with suspected ileus



Foreign bodies lodged in the gastrointestinal tract cause ulceration, haemorrhage, anorexia, dehydration, perforation, peritonitis and can result in death if not treated at the earliest (Anoop *et al.*, 2010). Timely diagnosis was made and the foreign bodies were removed by gastrotomy and enterotomy based on the location of the foreign bodies. The foreign bodies were identified as

granite stone (n=1), arachenut (n=1), cotton pad (n=1), plastic cover (n=1), faecoliths (n=6), sewing needle (n=1) and mango kernels (n=1). Plain radiography helped in the detection of radioopaque foreign bodies whereas contrast radiography enabled to identify the location and nature of radiolucent masses. Exploratory laparotomy revealed the presence of intussusception at the ileo-caeco-colic junction

which was radiographically diagnosed as intestinal foreign body but confirmed as intussusception by the bull's eye appearance in ultrasonography. In one animal, splenomegaly was the cause for gastric dilation and volvulus and splenectomy was adopted.

The animals treated for the presence of gastrointestinal foreign bodies recovered uneventfully without any recurrence of vomiting. The prognosis is usually good after the removal of foreign body (Brown, 2003). The animal which underwent splenectomy succumbed to death after two weeks post-surgery. Higher mortality rate is reported in GDV affected dogs after splenectomy was performed (Zatloukal *et al.*, 2005). The animals suffering from megaesophagus and megacolon were treated medically with prokinetic drugs and it was reported that the recurrence of regurgitation and vomiting had reduced.

Eventhough, radiography is considered inferior for the detection of gastrointestinal affections when compared to ultrasonography (Rose and Neiger, 2013), it proves essential in the identification of gastrointestinal obstruction by intraluminal and extraluminal foreign bodies (Sharma *et al.*, 2011), and aid in the diagnosis of intussusceptions and gastrointestinal motility disorders like megaesophagus (Washabau, 2003). In the present study, radiography proved to be an important and principal diagnostic tool for the detection of gastrointestinal affections in dogs affected with chronic vomiting which did not respond to prolonged medical treatment.

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