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An innovative technique to retrieve metallic foreign bodies from stomach of a beagle dog with videogastroscopy: A case report

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Abstract

The present communication has placed on record for successful treatment of a four and half year old male Beagle dog was presented with a history of vomiting with a cluster of iron nails found in vomitus. Appetite, thirst, urine colour, activity and stool consistency were normal but there was presence of smell of fresh blood in dark colour stool. The plain radiographic examination of abdomen revealed, stacks of iron nails in stomach and few nails were seen in the small intestine. The dog was premedicated with Atropine sulphate and anesthetized with xylazine and Ketamine and was subjected for videogastroscopy for retrieval of iron nails from the stomach with the help of a bar magnet in the anterior part of the endoscopic forceps. All the nails from the stomach were successfully removed in 5 times repeated withdrawal of the magnet. Therapeutic management comprised of antibiotics, antiulcerogenic, probiotics and acid blocker. Light liquid paraffin (20ml) was infused directly into the stomach and all the nails in intestine came out with faeces on the next day. The dog recovered successfully.

Keywords: Metallic foreign body, bar magnet, videogastroscopy, liquid paraffin

Introduction

In canine, gastrointestinal foreign bodies (FBs) are relatively common and cause direct physical injury to the mucosal barrier to their way through, or they lodged in the pylorus region of the stomach leading to acute gastritis, gastric ulceration or obstruction. (Fossum, 2007) [5]. This occurs due to their slightly unsystematic eating habits, exposure to toys and dental chews and swallowing of incompletely masticated food. If unresolved, these FBs can become life threatening. Bone or cartilage material, fish hooks, needles, chew treats, balls and toys are reported FBs in dogs (Binvel *et al*, 2018, Gianella *et al*, 2009, Hayes *et al*, 2009, Pratt *et al*, 2014, Thompson *et al*, 2012, Spielman *et al*, 1992 and Michels *et al*, 1995) [2, 6, 8, 14, 20, 16, 11]. The common clinical signs are vomiting, salivation, retching, gagging, regurgitation, weight loss, anorexia, pain, respiratory distress, restlessness and lethargy (Gualtieri, 2001, Tams, 2003 and Willard, 2004) [18, 19, 7, 23]. The severity of the clinical signs depends on the type and size of FB, its location, the duration of obstruction, and the presence or absence of a stricture or a wall perforation with subsequent abscessation, pleuritis, mediastinitis, pneumomediastinum, pneumothorax, peritonitis and pneumoperitoneum (Uma rani *et al*, 2010, King, 2001 and Seiler *et al*, 2001) [21, 9, 15]. The diagnosis is clear when the foreign bodies are visualized in the radiograph distinctively. The interpretation by using radio graphical examination varies according to the foreign body type (Webb and Twedt 2003, Malancus and Solcen, 2012) [22, 10]. Although rare, possible complications associated with endoscopic removal of FBs include perforation, hemorrhage, malfunctions in moving the FB making it more difficult to remove, breathing problems related to esophageal perforation with possible tracheal involvement, and the formation of stenosis when there is damage to the esophageal mucosa (Tams & Rawlings, 2011) [17, 18]. The purpose of the study was removal of the iron nails from gastrointestinal tract with bar magnet under videogastroscopy and light liquid paraffin.

Case History & Clinical Findings

A Beagle dog of four and half year old was presented in the Veterinary Clinical Complex, College of veterinary Science, Khanapara, AAU with a history of normal appetite, normal thirst, clear urine colour and good alertness. The stool colour of dog was blackish, normal consistency and there was presence of smell of blood. The owner also reported that the dog had vomited once with a cluster of iron nails along with the vomitus (Fig: 1).

On clinical examination, the body temperature of the dog was 102.2⁰ F; visible mucous membrane was normal in colour. On auscultation of the chest region, the dog showed no characteristic abnormalities. On abdominal palpation, the dog exhibited signs of pain perception.

Diagnosis

As per history of the case a radiographic examination of the dog was felt necessary. The plain radiography of abdomen revealed stacks of iron nails in the region of stomach and intestine (Fig. 2). Thus, it was confirmed as a case of gastric foreign body syndrome and was planned to remove the gastric foreign bodies with the videogastrosopic intervention. The routine hematological examination was carried out & the result revealed mild lymphocytosis (33.2%), rest all the parameters were within their normal ranges.

Treatment

The dog was subjected for videogastrosopy (Storz Xenon 100) for retrieval of iron nails from the stomach with the help of a bar magnet. The dog was premedicated with atropine sulphate @ 0.04mg/kg body weight subcutaneously. After 10 mins, Xylazine @ 1.0mg/kg and Ketamine @ 5.0mg/kg were mixed in one syringe and was injected I.M.ly. Cuffed endotracheal tube was inserted into the trachea and the dog was positioned in left lateral recumbency for videogastrosopic retrieval of the nails. One videogastroscope forceps was passed through the working channel and a bar magnet inside double layers of glove finger was tied with the exposed tip at the tip of the insertion tube. The magnet cover was lubricated with Lox 2% jelly and inserted with the insertion tube through the oesophagus upto the stomach. The nails were located by videogastrosopy and the magnet was brought close to the nails. Then the whole assembly of insertion tube and magnet fixed forceps was gently pulled out where few nails were also withdrawn with the magnet (Fig.:3). The process was repeated five times to remove 26 nails and one medium sized rubber band from the stomach (Fig.:4). Moreover, light liquid paraffin (20 ml) was also administered into the stomach through nasogastric intubation for expulsion of intestinal foreign bodies with stool smoothly. After retrieval of foreign bodies the dog was treated with Antibiotics (Cefpodoxime @ 10mg/kg body weight) for 5 days, Sucralfate (1tsf orally TID), Darolac probiotic capsules (1 cap, orally daily for 10 days) and Pantaprazole @ 2mg/kg body weight orally at empty stomach in the morning for 10 days. On next day, again radiographic examination was carried out to nullify the presence of foreign bodies inside the stomach as well as in the intestinal loops (Fig.5). The dog recovered uneventfully and has normal appetite, urination, defaecation on follow-up visit after 2 days.



Fig 1: Cluster of iron nails along with the vomitus



Fig 2: Plain radiography of abdomen revealed stacks of iron nails in the region of stomach and intestine



Fig 3: Nails withdrawn with the magnet fixed forcep



Fig 4: 26 nails and one medium sized rubber band removed from the stomach



Fig 5: Radiograph revealed absence of foreign bodies on the next day after treatment

Discussion

In the present investigation, the beagle dog suffered from gastric foreign body syndrome. Where the dog consumed more than 26 number of nails and also one medium size rubber band due to which dog showed vomiting with a cluster of nails in vomitus content. At the time of presentation the clinical signs became more severe due to the foreign body migration to intestine. This is in agreement with Tams and Spector, 2011, Aronson *et al*, 2000^[19, 1] and Papazoglou *et al*, 2003^[12] who stated that gastrointestinal foreign bodies caused variety of clinical signs depending on the location, the degree and the duration of the obstruction.

Radiography and endoscopy was the most confirmatory diagnostic tools for the detection of foreign body and also to identify the site of deposition. This is in agreement with Webb and Twedt, 2003, Malancus *et al*, 2012, Cannaday, 1931 and Hayes, 2009^[22, 3, 8, 10] who stated that when foreign bodies were distinct, the radiological interpretation differed according to the type of foreign material and the metal object took radiopaque. Sometimes foreign bodies are invisible with radiography, endoscope can detect them. This is in harmony with Tams and Spector, 2011 and Parrah *et al*, 2013^[19, 13] who reported that the stomach should be thoroughly examined for the presence of any additional foreign material that might not have been identified on radiographs. With endoscopic examination, the foreign bodies are viewed freely move in the stomach as mentioned by Michels *et al*, 1995^[11] and Webb and Twedt, 2003^[22]. The freely movable foreign bodies might migrate much more deeper to the lower GIT or intestinal loop which may cause hindrance to retrieve the foreign body by endoscopy. Therefore, lubricant is needed for proper expulsion of foreign bodies with faeces. Endoscopically, there is mucosal damage with different forms of erythema, erosions and bleeding linear ulcer due to the foreign body ingestion which was in agreement with Webb and Twedt, 2003^[22] who stated that foreign bodies might cause direct physical damage in the pylorus, resulted in acute gastritis, vomiting, and gastric ulceration and biochemical changes consistent with an upper gastrointestinal obstruction. So, after foreign bodies retrieval, medical treatment was applied for mucosal repair which was in agreement with Webb and Twedt, 2003^[22] and Tams 2003^[19].

The gastric foreign bodies could be removed with the aid of video gastroscopy guided bar magnet without any complication. Tams and Spector, 2011, Michels *et al*, 1995 and Cohn *et al*, 2003^[19, 4] who stated that the limiting factor of foreign body removal were the ability to grasp the foreign body and the ability to withdraw the objects through the small channel of the endoscopic probe. In the present case, grasping of the foreign bodies was not required as all the iron nails adhered to the bar magnet for removal not through the channel of the endoscopic tube, but as a whole set of tube, forceps, magnet with nails. Light liquid paraffin was not absorbed from GIT and hence lubricated the nails and intestinal lumen for easy expulsion of nails with faeces. The present technique avoided the most invasive surgical treatment.

Conclusion

Thus it could be concluded from the present case study that metallic foreign bodies like iron nails may be successfully removed from stomach with bar magnet under video gastroscopic observation. Iron nails in intestine can be expelled easily by administering light liquid paraffin through

naso-gastric tube.

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