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Double Intussusception in Dog

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ABSTRACT

A 1 year old nondescript dog with history of vomiting, diarrhea, anorexia, dehydration, prolapsed of rectum and developed a double intussusception which affected the ileum. Celiotomy revealed the intussusception to be swollen and congested with adhesions between the serosal surface of intussusceptum and intussuscepiens. After surgical treatment and post operative care with ringer solution, cefazoline, patient status had been well.

Key words: Double intussusception, ileum, dog, celiotomy, intussusceptum, intussuscepiens

INTRODUCTION

The term intussusception is used to describe a condition in which a part of the bowel (the intussusceptum) prolapsed or invaginates into the lumen of an immediately adjoining part (the intussuscepiens) (Cina *et al.*, 2009; Han *et al.*, 2008; Joy and Patterson, 1978). Commonly the intussusceptum is a proximal segment of bowel (i.e., closer to the mouth) which slides into a distal (closer to the anus) segment. This pattern follows the normal direction of peristalsis (Levitt and Bauer, 1992). It occurs at any location in the gastrointestinal tract from the stomach to the large intestine; however, previous studies have indicated that the majority of intussusceptions in small animals are enterocolic (Han *et al.*, 2008; Levitt and Bauer, 1992). Intussusceptions were classified according to their location in the bowel (Lewis and Ellison, 1987). In young dogs other forms of intussusceptions have been reported that include: Gastroesophageal, pylorogastric, enteroenteric, enterocolic and colocolic (Han *et al.*, 2008; Levitt and Bauer, 1992).

This disorder more often occurs before the anastomotic site or the plicated section of the bowel (e.g., ileocolic orifice or gastroesophageal junctions) (Ellison, 1986; Siegmund, 1973). Several conditions or disease that effective on the intestine motility are predisposing to intussusceptions. Intussusception is seen more commonly in puppies with intestinal masses (Runyon *et al.*, 1984), parasites such as hookworms, whipworms and roundworms (Wilson and Burt, 1974), intestinal foreign bodies such as bones, plastic toys, etc. (Larsen and Bellenger, 1974) and abdominal surgery (Kipins, 1977). Gastroenteritis or acute viral-induced enteritis has been reported as the general predisposing factor for intestinal intussusception in young dogs (Han *et al.*, 2008; Reed and Catcott, 1975).

Puppies and kittens are the most likely ones to develop intussusceptions (Han *et al.*, 2008). Although it can occurs in any age or species but more than 80% f intussusceptions occurs at first year old puppies (Hedlund and Fossum, 2007). Rate of male animals compared to female animals

suffering intussusceptions is twice. The common clinical signs associated with intussusceptions are associated with referable to partial or complete intestinal obstruction and the affected bowel may be palpable as a sausage-shaped intra abdominal mass (Kirk and Bistner, 1975; Larsen and Bellenger, 1974). If intussusception untreated, the blood supply to that section is greatly reduced and the bowel tissue begins to ischemia and necrosis. There are limited published data that explain the influence of location of the intussusception, time from beginning of clinical signs and presence of adhesions on the severity of clinical signs and outcome (Joy and Patterson, 1978).

HISTORY AND CLINICAL FINDINGS

On March 30, 2011 a one year old intact female nondescript dog referred to Specialized Small Animal Clinic of Islamic Azad University (Science and Research Branch) due the 6-day history of anorexia, depression, vomiting and diarrhea which had become more severe. During physical examination no mass was palpable in the abdomen. Because of tenesmus, a part of rectum was prolapsed (Fig. 1).

Plain radiographs showed areas of reduced serosal fluid and of increased soft tissue opacity in the abdomen. At the time celiotomy was performed, there was one intussusception involving a segment of ileum (Fig. 2).



Fig. 1: Prolapsed part of rectum



Fig. 2: A double intussusception in ileum



Fig. 3: Congested part of ileum



Fig. 4: Ileum serosal adherence



Fig. 5: Engorged blood vessels

The intussuscepted segments were edematous, congested and showed cyanosis (Fig. 3). The serosal surfaces of the intussuscepted parts were adherent to one another (Fig. 4). The blood vessels in the rest of the intestines were engorged (Fig. 5).

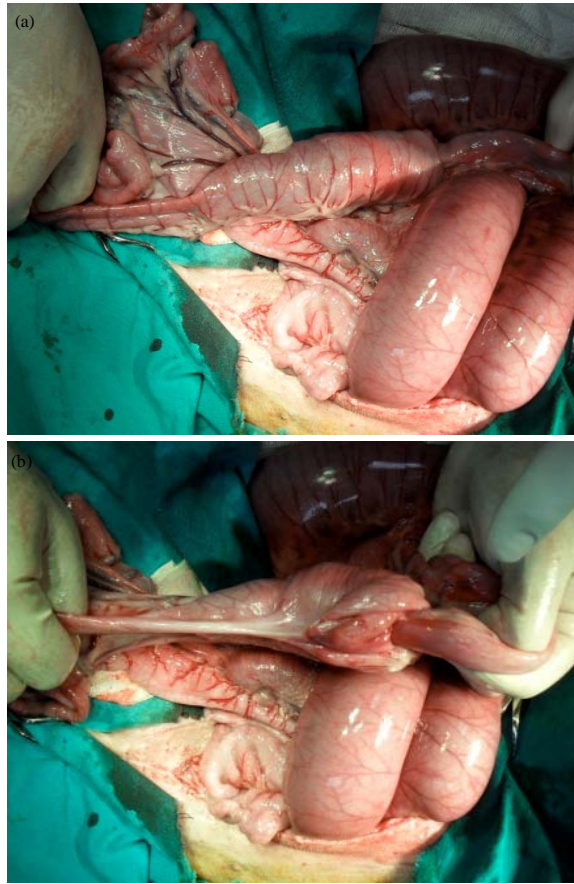


Fig. 6(a,b): Resection of intussuscepted bowel

SURGICAL PROCEDURE

Pre-operation the patient was given one liter of ringer's solution and in preparation for surgery. Puppy premedication was made with 0.1 mg kg^{-1} acepromazine, 1 mg kg^{-1} xylazine and then anesthesia was induced and maintained with 10 mg kg^{-1} of a 10% solution of ketamine and maintained. As well, the dog received 2 mg kg^{-1} of dexamethasone and 10 mg kg^{-1} cefazoline intravenously.

The intussusception was readily reduced by manipulation and gentle traction of intussusceptum and pressure on the intussusciens. The bowel involved in the intussusception was resected along with some bowel proximal and distal to it (Fig. 6 a,b).

The resected bowel represented 30 centimeter of ileum. Adhesions between serosal surfaces of the intussusceptum and intussusciens were well formed. These adhesions could be broken down manually and washed with 0.9% NaCl solution (one liter solution containing 50 mg dexamethasone). Postoperative management made with infusion of 5 days ringer solution, cefazoline 10 mg kg^{-1} tid.

DISCUSSION

Intussusceptions more commonly found in small animal, especially in German shepherd dogs and Siamese cats. It formed as a result of abnormality within the intestinal wall (nonhomogeneity) that alters the intestinal pliability and motility (Hedlund and Fossum, 2007; Sivasankar, 2000).

Some authors have reported that incidence of intussusception in puppies and kittens were higher than adult animals (Levitt and Bauer, 1992). In the study of Wilson and Burt, 80% of affected animals were less than one year of age (Wilson and Burt, 1974), also Weaver (1977) reported that 73% of dogs in his study were less than six months old. The signs of intussusceptions in small animals are varied and include vomiting, diarrhea or bloody mucoid diarrhea, cylindrical abdominal mass in the cranial to mid-abdomen depression and anorexia (Butler, 1972; Lewis and Ellison, 1987; Joy and Patterson, 1978; Okewole *et al.*, 1989; Rosin, 1985).

Levitt and Bauer (1992) reported that diarrhea was the common sign in dogs and cats but abdominal pain are not regular sign of disease. Intussusception must be distinguished from several condition, include intestinal volvulus or torsion, intestinal laceration or obstruction; foreign bodies and tumors, abscesses, granulomas and congenital malformations (Han *et al.*, 2008).

Diagnosis of intussusceptions with survey of plain radiographs may be difficult and patients may reveal obstruction. The efficacy of contrast radiography in confirmation of diagnosis was higher. In human infants, barium enemas are used to reduce enterocolic intussusceptions (Levitt and Bauer, 1992). Ultrasonography was considered the accurate method for detection of intussusceptions (Hedlund and Fossum, 2007; Manzur and Voros, 2000).

Commonly, the sliding of a segment of bowel is defined, whereas, very rarely, two separate parts can prolapsed into the same distal segment, giving rise to double intussusceptions (Han *et al.*, 2008). To our knowledge, double intussusception is a very rare surgical problem. Surgical treatment consisted of either simple reduction, simple reduction with plication, intestinal resection/anastomosis, or intestinal resection/anastomosis with plication.

CONCLUSION

Intussusception may occur in dogs with intestinal masses, parasites, intestinal foreign bodies such as bones, plastic toys and abdominal surgery. Animal those suffering from intussusceptions have been having episodes of anorexia, depression, vomiting and diarrhea. Patient animals should be immediately undergoing surgery.

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