

## Transient ileocolic intussusception in a dog with histiocytic ulcerative tiflocolitis: a case report

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**ABSTRACT:** In human medicine, the association between intussusceptions and inflammatory bowel disease is well known, even if referred to only in case reports or a small series of patients. The exact cause of intussusceptions, in general, is unknown; however, any lesion in the bowel wall or irritant in the lumen that alters the normal peristaltic pattern may initiate invagination. In Crohn's disease the lead point may be dysrhythmic contractions secondary to the on-going inflammatory process of a thickened, inflamed segment of bowel wall. In veterinary medicine, the information available related to the association of intussusceptions and inflammatory bowel disease is limited. The present study is the first reported case of a dog in which ileocolic intussusception and histiocytic ulcerative colitis appear to be associated. Moreover, this is also the first description of the involvement of the caecum in canine histiocytic ulcerative colitis. Herein, we document a condition previously reported in humans with inflammatory bowel disease, and we believe that this work contributes to identifying the similarities between human and canine inflammatory bowel disease.

**Keywords:** inflammatory bowel disease; canine; invagination

Intussusception is an invagination of one segment of the gastrointestinal tract into the lumen of an adjoining segment (Allenspach 2010). Enterocolic intussusception, and particularly ileocolic intussusception is the most common type described (Allenspach 2010). It is believed that most intussusceptions in young animals are idiopathic, but a number of conditions such as intestinal parasitism, linear foreign bodies, viral enteritis, non-specific gastroenteritis and intraluminal masses have been suggested as predisposing factors for intestinal intussusception (Levitt and Bauer 1992; Rallis et al. 2000; Patsikas et al. 2003, 2008; Schwandt 2008; Allenspach 2010).

Adult intussusceptions in the setting of inflammatory bowel disease in humans is a rare phenomenon, but some reports are described (Knowles et al. 1989; Kihiezak and Rosenfeld 1998; Maldonado et al. 2004; Lopez-Tomassetti et al. 2006; Maconi et al. 2007; Coghlan et al. 2010). This condition has been also described in some cases of eosinophilic enteritis, an uncommon condition in humans (Kshirsagar

et al. 2007; Shin et al. 2007). In veterinary medicine, inflammatory bowel disease has been suggested to be implicated in the development of other manifestations related to motility disorders such as gastric dilatation-volvulus (Braun et al. 1996). Recently, a possible relationship between inflammatory bowel disease and intussusceptions in dogs has been suggested (Oliveira-Barros et al. 2009).

In this report, one case of transient ileocolic intussusception presenting in a dog with histiocytic ulcerative tiflocolitis is described. To the best of the authors' knowledge, the following report represents the first case in which both entities appear associated.

### Case description

An eight-month-old, male, French bulldog was referred to the Veterinary Medicine Teaching Hospital of the Complutense University of Madrid to further investigate the cause of a three month

history of diarrhoea. The diarrhoea was characterised by increased defecation frequency (20 times daily), soft mucoid bloody faeces and frequent episodes of urgency and tenesmus. The referring veterinarian had tried different prescription diets and medical treatments with mebendazole, metronidazole, sulfamethoxazole/trimethoprim, loperamide, prednisone and sulfasalazine. The dog showed no improvement after this course of therapy.

Physical examination revealed slight weight loss and increased borborygmus was found during abdominal palpation. Rectal palpation showed the presence of blood and rectal dilatation. The initial diagnostic plan included a complete blood count, a biochemical profile, faecal analysis and abdominal ultrasound. Laboratory findings showed no abnormalities. Abdominal ultrasound revealed: gastric distension with partially digested food (last food intake three hours ago), a slightly prominent gastric wall (antrum), thickening of the colonic wall though the layered appearance of the bowel wall was maintained, and thickened cecum wall. Ultrasonographic signs of intestinal intussusception were not observed. Metronidazole and a home-made elimination diet lasting at least three weeks were again prescribed.

Clinical signs initially improved but bloody faeces were evident four weeks later. An upper and lower gastrointestinal endoscopy was planned. The endoscopy revealed erythemic mucosa with a granular appearance in stomach, a lower oesophageal sphincter incompetence and erythemic, granular,

irregular and friable mucosa in the duodenum. Colonoscopy revealed an erythemic mucosa with an irregular surface and thickened folds throughout the entire colon (Figure 1). There were similar gross abnormalities of the mucosa adjacent to the ileocecal and cecocolic valves. In addition, a prominent ileocecal valve was described, showing protrusion of the terminal ileum into the colon (Figure 2). The cecum could not be examined during endoscopy. Based on the suspicion of ileocolic intussusception, an exploratory celiotomy was performed immediately after endoscopic examination. The surgery documented severe thickening of the colonic and cecum wall (Figure 3). An ileocecal intussusception was not evidenced and vasculature of the area was not affected, suggesting the transient nature of this finding. Taking into account its unusual gross appearance, the cecum was completely resected for histopathological analysis.

The histopathological study of the biopsies revealed: a moderate lymphocytic-plasmacytic infiltrate in the duodenum with moderate oedema in the *lamina propria* and lymphangiectasia, a moderate lymphocytic-plasmacytic infiltrate in the colon with occasional clusters of histiocytes, and a severe histiocytic infiltration with neutrophil, lymphocyte, and plasma cell infiltration in the cecum (Figure 4). A diagnosis of histiocytic ulcerative tiflocolitis was made on the basis of the dog's clinical signs and the histopathological findings.

Treatment was initiated with enrofloxacin, 5 mg/kg/12 h for the duration of two months. Clinical signs dramatically resolved after starting this



Figure 1. Endoscopic appearance of colon. Erythemic mucosa with an irregular surface and thickened folds is presented



Figure 2. Endoscopic appearance of ileocecal and cecocolic valves. A prominent ileocecal valve is observed, showing protrusion of the terminal ileum into the colon

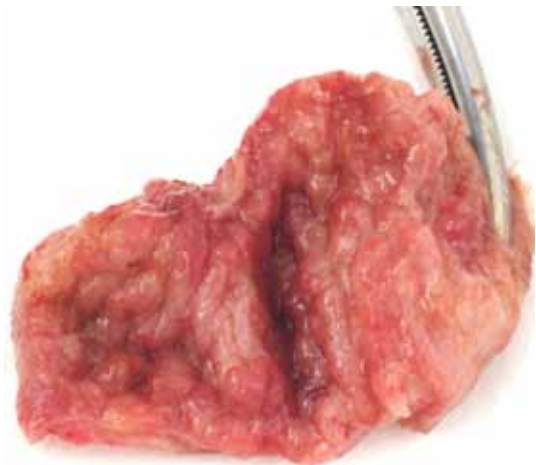


Figure 3. Macroscopic appearance of caecum. Severe thickening of caecum wall is observed

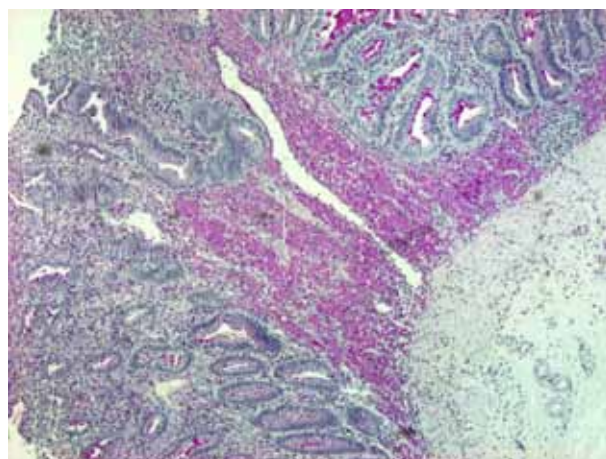


Figure 4. Histologic appearance of caecum. *Lamina propria* is extensively infiltrated by histiocytes with strongly periodic acid-Schiff positive cytoplasm (PAS, 4×)

therapy. The dog remained free of clinical signs 12 months later.

## DISCUSSION AND CONCLUSIONS

Oliveira-Barros et al. (2009) have recently suggested a relationship between inflammatory bowel disease and intussusception in dogs. In this retrospective study of 13 dogs with intussusceptions, the histopathological evaluation of bowel samples showed lymphocytic-plasmacytic or eosinophilic enteritis in nine of them, presenting only five clinical signs of inflammatory bowel disease. However, Rallis et al previously reported 29 dogs with intussusception in which histopathology did not demonstrate any evidence of inflammatory bowel disease (Rallis et al. 2000). Differences among populations or difficulties in standardisation of diagnosis of inflammatory bowel disease could help to explain these divergent results. It has been reported that acute enteritis or gastroenteritis predisposes to intussusception by inducing alterations in the intestinal motility (Rallis et al. 2000), but the involvement of inflammatory bowel disease is unclear. The exact cause of intussusceptions, in general, is unknown; however, any lesion in the bowel wall or irritant in the lumen that alters the normal peristaltic pattern may initiate invagination (Knowles et al. 1989). In Crohn's disease the lead point may be dysrhythmic contractions secondary to the on-going inflammatory process of a thickened, inflamed segment of bowel

wall (Knowles et al. 1989; Kihiezak and Rosenfeld 1998; Maconi et al. 2007). Thus, it is uncertain why intussusceptions are not encountered more frequently in Crohn's disease. Regarding cats, Burkitt et al. (2009) showed that older cats with intussusception may be more likely to have alimentary lymphoma or inflammatory bowel disease.

Intussusceptions occur primarily in dogs younger than one year of age and are most commonly found at the ileocolic junction (Levitt and Bauer 1992; Applewhite et al. 2002; Allenspach 2010). Both conditions are reported in the present case. However, nothing is described related to the localisation of intussusceptions in dogs with inflammatory bowel disease (Oliveira-Barros et al. 2009). In humans with inflammatory bowel disease several localisations have been described, such as ileoileal (Knowles et al. 1989; Lopez-Tomassetti et al. 2006), colocolonic (Maldonado et al. 2004; Coghlan et al. 2010), or ileocolic (Kihiezak and Rosenfeld 1998). It has been described that intussusceptions in Crohn's disease are expected to be found in the ileal and more proximal bowel (Maconi et al. 2007), suggesting a possible relationship between localisation of the disease and type of intussusceptions. In our patient, disease was evidenced in colon and caecum, but ileal samples were not taken. A recent study describes the utility of performing ileal sampling in those dogs with pronounced intestinal signs of enteropathy (Casamian-Sorrosal et al. 2010). Therefore, further studies in which both the colon and ileum would be sampled could be interesting.

Spontaneous reduction of intestinal intussusception has been described in dogs (Patsikas et al. 2003 and 2008). In human medicine, spontaneous reduction has been commonly described (Maconi et al. 2007). Maconi et al. reported 87.5% of self-limiting small bowel intussusceptions that resolved during the ultrasound examination. Specifically, in patients with Crohn's disease or ulcerative colitis, most of the intussusceptions documented were transient (Knowles et al. 1989; Kihiezak and Rosenfeld 1998; Maconi et al. 2007), as in the clinical case reported here. This intermittent presentation could contribute to the under diagnosis of intussusceptions in dogs with inflammatory bowel disease.

Another interesting fact to consider in this clinical case is the involvement of the caecum in UHC, a finding that has not been previously reported in the literature. Colonoscopy and biopsy are the diagnostic methods of choice for this disease (Allenspach 2010). Caecum biopsies are not routinely obtained, supporting the absence of a description of UHC in this location. In our case, the endoscopic finding suggestive of an ileocolic intussusception led to an unusual exploratory laparotomy and the subsequent histological exam of the caecum. The presence of histiocytic infiltrates in locations other than the colon should be systematically evaluated in order to determine the real extent of this disease.

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