

## Chronic Diarrheas in Dogs: Mistakes in its Diagnostic Approach

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**Abstract:** In this study, researchers present 3 cases of dogs with chronic diarrheas where errors were committed in the diagnostic process that had fatal consequences for patients. These mistakes included: veterinarians took a long time to perform biopsies take biopsies of only certain portions of the gastrointestinal tract in dogs with weight loss and hipoproteinemia and practice a digestive endoscopy without take biopsies because presenting a normal endoscopic image. Finally, researchers describe guidelines for diagnosis of chronic diarrheas and to take gastrointestinal biopsies.

**Key words:** Chronic diarrhea, gastrointestinal biopsy, image, biopsies, inflammatory bowel disease

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### INTRODUCTION

Diarrhea is a major cause of consultation at the veterinary clinic. Most of these are acute and reach a diagnosis is not always important because they are generally self-limiting. Others may become so severe that trigger dehydration causing electrolyte imbalances which becomes more important symptomatic treatment the diagnosis itself (Miller, 2007). By contrast, chronic diarrhea, represents a diagnostic challenge to the veterinarian. A diarrhea is considered chronic when it has completed more than 3 weeks evolucion (Marchetti *et al.*, 2010; WSAVA *et al.*, 2010). It is important to identify the origin of it as it can be small or large intestine and how to address each one is different. Chronic diarrhea, small intestine usually exhibit characteristics that make them more dangerous. On the contrary, colithis rarely a danger to the animal (Allenspach *et al.*, 2007). There diarrhea associated with liver, kidney, metabolic and cardiac where making a good clinical history, physical examination and laboratory tests such as complete blood count, blood chemistry and urinalysis help rule not caused diarrhea in intestine. Simpson (2008) should also be made to least three serial coproparasitoscopic with special attention to *Giardia* sp. which requires specific tests with zinc sulfate or commercial ELISA test but can also be seen in a smear directo (Rishniw *et al.*, 2010; Solaymani-Mohammadi *et al.*, 2010), another diagnostic

test to be performed is the TSI (Serum Immunoreactive Trypsin) to rule out Exocrine Pancreatic Insufficiency (EPI) (Soetan *et al.*, 2010). Although, rare should also be excluded bacterial diarrhea. Some clinicians propose stool cultures and sensitivity although, the results should be interpreted cautiously. It is also possible that the diarrhea is the entity known as antibiotic-responsive diarrhea, difficult to diagnose diseases although, recently it has been used the bacteria count per milliliter of duodenal aspirate which is required to perform endoscopy (Kil and Swanson, 2011). Once discarded all these entities if the patient has shown improvement is likely to present any of the following entities: intolerance/food allergies, Inflammatory Bowel Disease (IBD), intestinal lymphoma or Intestinal Lymphangiectasia (LI) (Gaschen, 2006). After ruling intolerance/allergy to food exclusion diets, the intestinal biopsy is the most important tool to reach a diagnosis of chronic diarrhea latter pathologies. Such intestinal biopsies may be obtained by laparotomy or endoscopy each having its advantages and non advantages (Cerquetella *et al.*, 2010). The IBD is a common disease in dogs which the standardization group of gastrointestinal diseases WSAVA (World Small Animal Veterinary Association) is clinically defined as a spectrum of gastrointestinal disorders associated with inflammation of the stomach, small intestine and/or colon of unknown etiology. To be considered a clinical diagnosis of IBD, the animal must meet the following parameters:

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- Provide persistent gastrointestinal signs such as anorexia, weight loss, vomiting, diarrhea, hematequesis and mucus in the stool
- Lack of response to treatment only symptomatic
- Lack of diagnoses explaining intestinal inflammation
- Histologically benign intestinal inflammation

It has also established can affect both the small intestine and the bulk although, it is more common in dogs in the intestine presentation (Washabau, 2005). Although, biopsies are the most important diagnostic tool in chronic diarrhea there is currently a discrepancy in histopathologic interpretation thereof. For example, it has been shown that various veterinary pathologists have diagnosed the same manner uneven biopsies of dogs with diarrhea chronic (Willard *et al.*, 2002). This discrepancy is believed could be a lack of studies that describe the histopathological findings in dogs healthy intestine (Washabau, 2005; Garcia-Sancho *et al.*, 2007). The aim of this study is to describe the approach to the diagnosis of chronic diarrhea in dogs with emphasis on the mistakes made during the appraisal process.

### CLINICAL CASES

In this study, researchers describe three cases of dogs with chronic diarrhea. All patients underwent laboratory tests consisting of complete blood count, serial stool examination by flotation and zinc sulfate and measurement of TSI.

**Case consultation 1:** She introduced Dalmatian breed bitch 5 years old with a history of chronic diarrhea with over a year of evolution. Physical examination showed a body condition score of 1/5 scale as Purina (Laflamme, 1997) and distended abdomen pale mucous with dull sound on percussion support ascites. Previously she was taken to other veterinary clinics where dewormed was prescribed metronidazole, bismuth subsalicato made one change hypoallergenic food. The dog showed improvement but when treatment was discontinued relapsed with diarrhea. In addition to laboratory tests, the abdomen was punctured to analyze the ascites fluid. As abnormalities in blood chemistry was found to have one panhipoproteinemia of 26 g L<sup>-1</sup> (range 51-78 g L<sup>-1</sup>) hypoalbuminaemic of 12 g L<sup>-1</sup> (range 25-36 g L<sup>-1</sup>) and hipoglobulinemia 14 g L<sup>-1</sup> (ranges of 28-45 g L<sup>-1</sup>). He also, filed a hypocalcemia of 2 mmol L<sup>-1</sup> (range 2.05-3.09 mmol L<sup>-1</sup>). The blood count showed lymphopenia 400 mL<sup>-1</sup> (range from 1000-1400 mL<sup>-1</sup>). The ascitic fluid analysis was consistent with a transudate. With the results obtained and after control of ascites with

diuretics (furosemide and spironolactone) and cage rest, the patient was scheduled to exploratory laparotomy with a presumptive diagnosis of LI which is described as a dilatation of the lymphatic vessels the villi and lymphatics of the intestinal mucosa and submucosa. This entity is a relatively common cause of protein-losing enteropathy in perro (Van Kruiningen *et al.*, 1984). Clinically these patients have chronic diarrhea which may present sporadically vomiting, lethargy, exercise intolerance, anorexia and weight loss. Sometimes these animals can have edema in the body or limbs, ascites and pleural effusion. The clinical presentation is usually chronic from weeks to months. Seventeen patients with this condition have a number of abnormalities in clinical pathology including hypoproteinemia with hypoglobulinemia, lymphopenia, hypocalcemia and hipocolesteronemia. Of these alterations found in the dog, lymphopenia may be considered distinct change of this disease with other chronic diarrhea with loss of protein (Brooks, 2005; Branquinho *et al.*, 2011).

In this case, it was decided to take full thickness biopsy it is shown that it is more common to find abnormalities in the intestinal serum histopatologic (Branquinho *et al.*, 2011) cuts are made to prevent leakage of serosal patch at the site of the enterotomy. The result of intestinal biopsies was linfoplasmocitaria lymphangiectasia and enteritis. Because prognosis of patients with lymphangiectasia the owner decided to euthanasia.

The error in this case is the time elapsed since the submission of the first symptoms to intestinal biopsies. The exclusion diet consists of administering to the animal a protein that has never been exposed your digestive tract or otherwise using hydrolyzed protein as these apparently are too small to stimulate the intestinal immune system. The time for which this improvement of diarrhea in patients with food intolerance or allergy can be up to 8 weeks (Cave, 2012). It is also common that some food allergy patients without presenting problems inflammation infiltrated mejoren (Cave, 2010; Malewska *et al.*, 2011) but possibly the end continue with diarrhea and weight loss. Therefore, researchers believe that the exclusion diet is a fundamental part of the diagnosis of chronic diarrhea and are only unique treatment for diarrhea due to intolerance/allergy to food, especially when the dog continues to lose weight and protein. In this case, treatment was administered according to the nasal mucus and food changes were made as a treatment for diarrhea but no response should have been thought of another diagnosis. The parameters that require intestinal biopsies are weight loss and hypoproteinemia. The chronic small bowel diarrhea usually has these characteristics that make

them more dangerous therefore rapid diagnosis is essential so that the patient does not continue to decline and biopsy is not as dangerous (Simpson, 2008).

Although, the LI in dogs can be primary, in this case researchers believe that was secondary to an inflammatory reaction infiltrativa (Branquinho *et al.*, 2011). Probably if undertaken rapid diagnosis would not have developed the LI which this bitch had presented a better prognosis for LI has a poorer response to treatment than lymphoplasmacytic enteritis.

**Case 2:** HVU was referred to a dog of breed boxer, male 5 years old with a history of diarrhea with >5 months. The patient had a weight loss and when the query presented a body condition 2/5 with a weight of 20 kg. The dog had tenesmus and diarrhea was soft consistency with mucus. Physical examination found no abnormalities with the exception of poor body condition.

The patient had been subjected to commercial exclusion diets with hydrolyzed protein which was ruled diarrhea intolerance/allergy to food. The results of the laboratory tests showed no change which were discarded systemic causes of chronic diarrhea. Similarly no parasites were detected and the TSI was within the ranges.

With the results and signs presented by the patient, the veterinarian in charge of the case decided to perform a colonoscopy. During this procedure, the appearance of the colonic mucosa was normal. Still took eight mucosal biopsies for evaluation which reported no histopathological changes mucosa. The owner decided at that moment necropsy authorizing euthanasia where after taking samples from different tissues led to the diagnosis of lymphoplasmacytic enteritis.

The importance of this case is that only performed the endoscopic examination of colon since, the presence of mucus and tenesmus did suspect a colitis (Lecoindre and Gaschen, 2011). Although, the large bowel diarrhea is not common weight loss and protein there some exceptions such as ulcerative colitis, granulomatous and linfoma (Roth *et al.*, 1990). In this case, weight loss, felt that the animal had a granulomatous colitis of boxer but this was unlikely because this type of colitis is most commonly in dogs youngs (Craven *et al.*, 2011).

But the signs were suspicious of colon disease these are only a guide and may not reflect the presence of mucus and tenesmus indicate that this affected only the large intestine. On the other hand, it is fundamental bowel biopsies in any patient with a decrease in body mass it is a most specific sign of bowel diarrhea although, some colon disorders that might present. Possibly if he had made a duodenoscopy with biopsy would have obtained a diagnosis and specific treatment thus avoiding

euthanasia. Therefore, it is recommended to review and take biopsies of the stomach, duodenum, colon and ileum as any of these portions may be affected by infiltrators celulares (Washabau, 2005). Importantly endoscopic biopsies of the ileal mucosa are most useful for the diagnosis of chronic diarrhea than those obtained from duoden (Casamian-Sorrosal *et al.*, 2010; Scott *et al.*, 2011).

**Case 3:** Query is submitted to a mongrel dog 6 years old with a history of chronic diarrhea and vomiting >6 months with polyphagia who had presented acute abdomen a year ago. Physical examination found a body condition score of 2/5, pale mucous membranes and dehydration of 7-8% was admitted with liquid therapy and underwent laboratory tests. In addition, you plain abdominal radiographs.

Laboratory tests showed a leukocytosis of  $17 \times 10^3$  (ranges of  $5-14.8 \times 10^3$ ) and slight anemia normocytic normochromic  $4.8 \times 10^6$  ( $\times 10^6$  5.32 range). Also, showed a slight increase in ALT  $70 \text{ U L}^{-1}$  (range  $5-65 \text{ U L}^{-1}$ ) and AST to  $88 \text{ U L}^{-1}$  (range  $10-56 \text{ U L}^{-1}$ ). Serum TSI were  $2.1 \text{ mg L}^{-1}$  (range  $5.7-45.2 \text{ mg L}^{-1}$ ). Routine abdominal radiograph was compatible with radiopaque foreign body. Once rehydrated the patient underwent a gastroscopy which corroborated the foreign body wire, presenting a semblance of normal gastric mucosa. Unable to remove the foreign body endoscopic gastrostomy was performed by laparotomy. With the results obtained are attributed to chronic diarrhea IPE it is considered that values  $<2.5 \text{ mg L}^{-1}$  are highly diagnostic for this entity in dogs with signologia. Westermarck *et al.* (2010) also thought that the foreign body was causing gastric emesis. Omeprazole therapy was administered as  $1.5 \text{ mg kg}^{-1}$  every 24 h during a week, tylosin  $20 \text{ mg kg}^{-1}$  every 24 h to control possible secondary bacterial overgrowth and pancreatic enzymes IPE (Viokase-V of Fort Dodge Laboratories) 2 to 3 tablets with each meal for life. After 1 month of treatment, the patient did not respond to the same thing so it was decided to pancreatic biopsy by laparoscopy through the knot technique extracorporeo (Rodriguez *et al.*, 2004). The biopsy results confirmed a pancreatic acinar atrophy and lymphoplasmacytic infiltrates were found. The animal continued treatment but to follow the owner decided unanswered euthanasia. Necropsy was performed where lymphoplasmacytic infiltration was found in the intestinal mucosa in addition to changes already described in the pancreas. It is difficult to establish a relationship between these two organs infiltrated as there are no structural studies of the pancreas of old apparently healthy dogs. Although, described in buts lymphoplasmacytic infiltration with pancreatitis (Wiberg *et al.*, 2000).

Although, this is a rare event jointly presented by exocrine pancreatic insufficiency and lymphoplasmacytic enteritis this correlation is described in human (Triantafillidis and Merikas, 2010) medicine and has recently established a possible pancreatic disease in dogs with EIIC (Kathrani *et al.*, 2009).

The error in the handling of this animal was not to be made taking gastric and intestinal biopsies with the premise of the 2 previous diagnoses (gastric foreign body and IPE). It is important to establish that during endoscopic procedures diagnostic biopsies should be taken even if the mucosa normally present an appearance endoscopically. Endoscopically recommended taking between 8-10 biopsies inspected each segment (WSAVA *et al.*, 2010). In this animal, too, were able to perform biopsies during celiotomy practiced to remove the foreign body having the advantage of obtain full-thickness samples.

### CONCLUSION

Although, generally uncommon to be published cases of medical errors in this study researchers show three cases where poorly addressed diagnosing chronic diarrhea with adverse consequences for patients. This confirms that chronic diarrhea represents a diagnostic challenge for the small animal veterinarian. After ruling out other causes of diarrhea, so far even with some discrepancies, the best way to make the diagnosis of IBD in dogs is the gastrointestinal biopsies. This procedure should not be delayed in animals with decreased weight and/or have protein loss by diarrhea as these parameters compromise patient health and complicate anesthesia and surgery.

Finally, it is now advisable to perform a scan of the entire digestive tract in these patients as infiltrative lesions can affect any portion thereof, irrespective of the signs presented.

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