

## **SOME STUDIES ON CHRONIC DIARRHEA IN DOGS**

By

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### **SUMMARY**

*This work was done on 18 adult dogs aged 4-7 years from both sexes, belonging to Dogs Department of Police Academy in Alexandria Governorate. Animals were classified into two groups where clinical, physical, parasitological, hematological and biochemical aspects of chronic diarrhea were studied. The study revealed the following:*

*1-Parasitological examination of feces recorded that the main cause of chronic diarrhea in dogs under investigation were toxocara Canis and giardia species.*

*2-- Clinical signs of chronic diarrhea were frequent defecation of oily , greasy and light watery feces, marked weight loss, dehydration, anorexia, increase in respiratory and heart rate*

*3-Hematological examination revealed significant increase in the values of total leukocyte count, neutrophils, monocytes and packed cell volume with significant decrease in the percentage of lymphocytes in diarrheic dogs.*

*4-Serum biochemical analysis revealed significant decrease in the values of serum total protein, albumin, cholesterol, calcium ions, sodium, potassium and chloride and significant increase in the activities and values of ALT, GDH, AP, urea nitrogen, bilirubin and anion gap in diarrheic dogs when compared with healthy dogs.*

*5-Blood gas analysis in diarrheic dogs showed significant decreases in the values of blood pH , PCO<sub>2</sub> and HCO<sub>3</sub> ( metabolic acidosis) and significant increase in the value of PO<sub>2</sub>.*

### **INTRODUCTION**

Since the very old ages, dogs have been controlled by man and trained to satisfy their desire. History show us that man used dogs for hunting, grading and other. People always found selvesteem when trained their dogs such as loyalty, friendship and safeness. Sometimes in the black ages, some of royal families considered breeding a certain kinds of dogs that they own a crime and death was the punishment.

Diarrhea is the classic sign of small intestine diseases. It exists when there is an increased frequency of passage of feces, and increased fluidity of feces with increased volume per day of both Stephen (1989).

Diarrhea in dogs is frequently a clinical manifestation of primary diseases in other systems of the body and leads to dehydration due to high loss of body fluids and electrolytes. So that, the animal become sick and weak and can not do its work, sometimes infectious diarrhea leads to death of the animals. The measurement of blood constituents during the course of diarrhea acts an aid for diagnosis and elucidate the consequence of the diarrhea on metabolic process and to study the effect of diarrhea on organ function.

The present investigation was planned to secure the following information:

- 1-The probable cause of chronic diarrhea in police dogs.
- 2-The clinical picture characterized for chronic diarrhea.
- 3-Throw some lights on the mean values of some hematological and biochemical parameters of the blood in clinically healthy dogs.
- 4-The effect of chronic diarrhea on some hematological and biochemical parameters of the blood.

## **MATERIALS AND METHODS**

### **1-Animals:**

A total number of 18 adult mixed dogs aged from 7-10 years belonging to Dogs Department of Police Academy at Alexandria Governorate were examined in this study and were divided into two groups. Group one: included 9 dogs (apparently clinically healthy dogs used as a control) The second group consisted of 9 dogs with chronic diarrheic signs.

### **2-Samples:**

Three blood samples were collected from all dogs under investigation by cephalic vein puncture. First sample was obtained into heparinized plastic syringes, the syringes were sealed, placed on an ice bag and sent directly to the laboratory for measuring blood pH, blood gases and bicarbonate concentration within 15-30 minutes. Second blood samples was obtained into glass vials containing EDTA for hematological examination. Third blood sample was collected into vacutainers tubes containing clot activator for harvesting serum for biochemical analysis.

### **3-Hematological examination:**

Determination of total and differential leukocytic count, erythrocytic count, hemoglobin content and packed cell volume were done according to Sastry (1985).

#### 4-Biochemical analysis:

Serum levels of total protein, albumin, alanine aminotransferase activity (ALT), glutamate dehydrogenase activity (GDH), alkaline phosphatase activity (AP), glucose, total cholesterol, urea nitrogen, creatinine, bilirubin, phosphorus, calcium ions, sodium, potassium and chloride were determined calorimetrically using test Kit supplied by Boehringer Mannheim, Germany, K Labkit, and Data Medical Associated Inc. (DMA) according to the methods described by Peters, (1986), Doumans and Bigger (1972), Reitman and Frankel (1957), Trinder (1969), Watson (1961), Wybenga, et al; (1971), Husdan and Rapoport (1968), Sherlock (1957), Daly and Erthinghsausen (1972), Young (1990), Trinder (1951), Terri and Sesin (1958) and Schoenfeld (1964) respectively. The anion gap was calculated using the following formula according to Carlson (1989).

$AG = (Na+K) - (Cl+HCO_3)$ . Blood pH,  $PO_2$ ,  $Pco_2$ , and  $HCO_3$  values were determined by using an automatic gas analyzer ( ABL. 30 Acid-Base Analyzer, Radiometer, Copenhagen, Denmark).

#### 5-Fecal examination:

Fecal samples were examined for parasites using standard sedimentation in water technique followed by centrifugal flotation in saturated zinc sulfate and microscopy, by (Bugg, et al; 1999).

#### 6- Statistical analysis:

Statistical analysis was performed using the statistical Analysis System (SAS, 1987).

## RESULTS

#### History and clinical signs:

A mixed breed dog suffered from chronic diarrhea for 1 month duration associated with frequent defecation. Feces appear oily, greasy and light in color. Dehydration, marked weight loss was obvious with periods of anorexia. On physical examination, dogs were thin and lethargic, their average temperature (38.6C?), heart rate (130 beats/min) and respiratory rate (30 breaths/min). Visible mucous membranes were pink colored.

#### Fecal examination:

Fecal examination revealed mixed infestation with *Toxocara Canis* and *Giardia* spp. Mean values of blood picture values including total and differential leucocytic counts, erythrocytic count, hemoglobin content and PCV in diarrheic and healthy dogs are given in table (1). The mean results of serum biochemical and blood gas analysis including total protein, albumin, globulin, ALT, GDH, ALP, Glucose, cholesterol, urea, creatinine, bilirubin, phosphorus, calcium ion, sodium, potassium, chloride and Anion gap and pH,  $PO_2$ ,  $Pco_2$  and  $HCO_3$  in diarrheic and healthy dogs are presented in tables (2,3).

## DISCUSSION

Diarrhea is categorized as chronic if it has been persistent (3-4 weeks or longer) or has a pattern of episodic recurrence. Chronicity generally excludes simple dietary indiscretion, intoxication, and viral enteritis as causes Birchard and Sheding (1994). Clinical signs of chronic diarrhea in this study included frequent defecation of oily, greasy, light colored feces, dehydration, marked weight loss and exhibition of periods of anorexia. These signs were correlated with those obtained by Birchard and Sheding (1994). Such clinical signs could be attributed to diarrheal fluid loss, electrolyte imbalance, chronic malabsorption and protein-losing enteropathy.

Data in table (1) showed hematological parameters in apparently normal and diarrheic dogs – where in clinically normal dogs are nearly similar to results of Drazner, (1989) and Kuehn, (1991). In Diarrheic dogs significant ( $P < 0.01$ ) increase in the values of total leucocytic counts, neutrophil % ( $P < 0.05$ ), monocytes and packed cell volume ( $P < 0.05$ ), and significant decrease in percentage of lymphocytes. These results were in agreement with those obtained by O'Brien, et al; (1995), Brooks and Watson (1997), Crowe, et al; (1997), Zafar, et al; (1999) and Lieb, (2000) and disagreed with Baatz (1992), who observed characteristic fall in leucocyte concentration in diarrheic dogs, leucocytosis which is characterized by neutrophilia, monocytosis and lymphopenia was probably due to chronic inflammation of intestinal mucosa probably with a superimposed stress, Kuehn (1991), and Birchard and Sheding (1994); while significant ( $P < 0.05$ ) increase in PCV value is indicative of hemococentration from fluid loss, Sheding (1988) and Carmalt, et al; (2000)

Biochemical analysis of normal and diarrheic dogs serum as recorded in table (2,3) showed that the measured parameters in apparently normal were nearly similar to the results obtained by Drazner, (1989), Kuehn, (1991), Arselan (2001). In diarrheic dogs there were significant decrease in the values of serum total protein, albumin, total cholesterol, calcium sodium, potassium and chloride and significant increase in the activities and values of ALT, GDH, ALP, urea nitrogen, bilirubin and anion gap, in comparison with clinically healthy dogs.

Hypoproteinemia and hypoalbuminemia in diarrheic dogs were correlated to the results obtained by Drazner, (1989), Sevelius (1995), and Brooks and Watson (1997). These results could be attributed to protein leaking through damaged intestinal mucous membrane and suggest the presence of a protein-losing enteropathy.

Hypocholesterolemia and hypocalcemia in diseased dogs were in agreement with the results obtained by Willard (1989). These findings indicate steatorrhea (i.e. inability to absorb fat to synthesize cholesterol and the vitamin D sterol molecule). Lorenz, (1980) stated that hypocholesterolemia in diarrheic dogs was perhaps to be the result of an intestinal malabsorption or maldigestion.

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Hyponatremia ( $P < 0.01$ ) in diarrheic dogs was in agreement with the results obtained by Cullen, et al; (1998) and can be attributed to decreased absorption of water and sodium from intestine in severe diarrhea.

Hypokalemia ( $P < 0.01$ ) in present study disagreed with the results obtained by Walker, et al; (1998) but agreed with the obtained by Hartmann and Reder (1995) and Brooks and Watson (1997) whose proved that hypokalemia may results from gastrointestinal loss during diarrhea. Hypochloremia ( $P < 0.01$ ) in diarrheic dogs disagreed with Stephen (1989) and could be attributed to poor appetite and salt-losing enteropathy in chronic diarrhea.

The anion gap was increased ( $P < 0.05$ ) significantly in diarrheic dogs and in these dogs the decrease in  $P_{CO_2}$  ( $P < 0.01$ ) with respect to the control dogs was greater than increase in the anion gap, suggesting that a mixed high anion gap normal gap (metabolic acidosis) Grove-white and white, (1999), was present due to both net loss of bicarbonate (normal gap acidosis) and the accumulation of acid (high gap acidosis).

Compared with the control dogs, the diarrheic dogs showed significant decrease in pH,  $P_{CO_2}$  and  $HCO_3$  concentration (table 3). These results were most likely attributable to mild metabolic acidosis (Nieman and Culter, 1995). Significant decrease of  $P_{CO_2}$  in diarrheic than control dogs, suggests partially or fully compensatory change in the metabolic acidosis where  $CO_2$  is lost through the pulmonary alveoli.

A marked increase ( $P < 0.05$ ) in activities of alanine aminotransferase (ALT), glutamate dehydrogenase (GDH) and alkaline phosphatase (ALP) in diarrheic dogs were conceded with the results obtained by Kitch, et al; (1994), Dodurka and Kraft (1995), Sevelius (1995) and Brooks and Watson (1997). These findings indicate a secondary liver disturbance in consequence of the intestinal disease, whereas the liver participation in secondary enteropathies is the effect of primary disease other than intestinal disturbances. Dodurka and Kraft (1995), Larry (1997) stated that the activities of ALT and ALP were increased in liver hypoxia due to hemoconcentration. Significant increase in urea nitrogen, recorded in diarrheic dogs, was consistent with Kato, et al; (2001) and may be attributed to dehydration that resulted from diarrhea Stephen (1989).

Hypobilirubinemia ( $P < 0.01$ ) in diarrheic dogs may suggest a secondary liver disturbance in consequence of the intestinal enteropathies. It could be concluded that, patients with chronic diarrhea require a specific diagnosis especially parasitological diagnosis. Serum biochemical profile should be considered to exclude metabolic or extraintestinal disorders that could cause or result from diarrhea. Calculation of anion gap in diarrheic patients can provide insight into nature of the change in acid-base balance, because the anions that cause change in anion gap are the same anions responsible for acid-base balance.

## REFERENCES

- Arselan, H. A. (2001):** Liver and kidney function testes in healthy and diseased dogs. Ph, D. Sc., Thesis, Alexandria University.
- Baatz, G. (1992):** Ten years of clinical experience with canine parvovirus infection (PV-2 infection. Tierarztl. Prax. Feb; 20 (1): 69-78.
- Birchard and Sherding (1994):** Saunder Manual of small animal practice, 1st. ed.
- Brooks, D. and Watson, G. L. (1997):** Omeprazole in a dog with gastrinoma. J. Vet. Intern. Med. Nov. Dec; 11 (6) : 379-381.
- Bugg, R. L., Robertson, I. D. Elliot, A. D. and Thompson, R. C. A. (1999):** Gastrointestinal parasites of Urban dogs in perth, Western Australian. Vet. Journal, 157, 295-301.
- Carlson, G. P. (1989):** Fluid, electrolyte and acid base balance in clinical biochemistry of Domestic Animals, 4th. Academic press Inc. pp. 543-572.
- Carmalt, j. L., Baptiste, K. E. and Naylor, J. M. (2000):** Hypernatremia in neonatal elk calves: 30 cases. J. Am. Vet. Med. Assoc., 216 (1): 68-70.
- Crowe, D. T., Devey, T. Palmer, D. A., and Churchill, J. A. (1997):** The use of polymeric liquid enteral diets for nutritional support in seriously ill or injured small animals: Clinical results in 200 patients. J. Am. Anim. Hosp. Assoc. Nov-Dec; 33 (6) : 500-8.
- Cullen, J. J., Spates, S. T., Ephygrave, K. S. and Hinkhouse, M. M. (1998):** Endo toxin temporarily impairs canine colonic absorption of water sodium. J. Sureg. Res., Jan, 74 (1) : 34-8.
- Daly, J. A., and Erthinghasusen, G. (1972):** Clinical chemistry. 18, 263.
- Dodurka, T. and Kraft, W. (1995):** Alanine aminotransferase (ALT), aspartate aminotransferase (AST), glutamate dehydrogenase (GLDH), alkaline phosphatase (AP) and gamma-glutamyltransferase (GGT) in intestinal disease of dogs. Berl. Munch. Tierarztl. Wochenschr., Jul; 108 (7): 244-8.
- Doumas, B. T. and Bigger, N. G. (1992):** Standard method of clinical chemistry. Vol. 7 Academic Press, NY.
- Drazner, F. H. (1989):** Challenging cases in internal medicine: What's your diagnosis?. Veterinary Medicine Feb. 138-147.
- Grove-White, D. H. and White, D. G. (1999):** Abdominal distention in collapsed diarrheic calves: biochemical findings and treatment. Vet. Record. June 5, 144, 639-642.
- Hartmann, H. and Render, S. (1995):** Effect of dehydration on efficacy of rehydration with crystalline or colloidal saline infusions. Tierazliche Praxis 23 (4): 342-350.
- Husdan, H. and Rapopost, A. (1968):** Estimation of creatinine by the Jaffe reaction. A comparison of three methods. Clin. Chem. 14 (3): 222-238.
- Kato, I.; Nishimura, K.; Ueno, M.; Harihara. A. et al; (2001):** Toxicity study of cefmatilen hydrochloride hydrate (5-1090) (2)-Single oral dose toxicity study in dogs. J. Toxicol., Sci. May; 26 Suppl. 1: 5-12.

- Kitoh, K.; Watoh, K.; Chaya, K.; Kitagawa, H. and Sasaki, Y. (1994):** Clinical, hematological and biochemical findings in dogs after induction of shock by infection of heartworm extract. *Am. J. Vet. Res.*, Nov; 55 (11) : 1535-41.
- Kuehn, N. F. (1991):** Challenging cases in internal medicine: What's your diagnosis? *Veterinary Medicine*. April 354-370.
- Larry, M. C., (1997):** Interpreting increased liver enzyme activity in dogs. *Veterinary Medicine*, October, 867-880.
- Lieb, M. S. (2000):** Treatment of chronic idiopathic large bowel diarrhea in dogs with a highly digestible diet and soluble fiber: a retrospective review of 37 cases. *J. Vet. Intern. Med.*, Jan-Feb; 14 (1): 27-32.
- Lorenz, M. D. (1980):** Canine malabsorption syndromes. *Compend. Cont. Ed.* 2 (11): 885-893.
- Nieman, L. K. and Culter, G. B. (1995):** Cushing's syndrome: *Endocrinology*, 3rd Ed. (L.J.De-Groot, ed) W.B. Saunders Philadelphia, Pa., pp: 1741-1770.
- O'Brien, S. R.; Seller, T. S., and Meyer, D. J. (1995):** Artifactual prolongation of the activated partial thromboplastin time associated with hemoconcentration in dogs. *J. Vet. Intern. Med.*, May-Jun; 9 (3): 169-70.
- Peters, T. J. (1968):** Estimation of total protein concentration. *Clin. Chem.*, 14: 1147.
- Reitman, S. and Frankel, S. (1957):** A calorimetric method for determination of serum glutamic oxalacetic and glutamic pyruvic transaminase. *J. Clin. Pathol.*, 28-56.
- SAS. (1987):** Statistical Analysis System (SAS) Institute Inc., Cary, NC; USA.
- Sastry, G. A. (1985):** *Veterinary Clinical Pathology*. 3rd ED. CBS Publishers distributors Deli. 32- India.
- Sevelius, E. (1995):** Diagnosis and prognosis of chronic hepatitis and cirrhosis in dogs. *J. Small. Anim. Pract.*, Dec; 36 (12) 521-8.
- Sherding, R. G., (1988):** Clinical signs and diagnosis in small animal practice. In Ford (ed): New York. Churchill Livingstone.
- Sherlock, S. (1957):** *Liver Disease*. P. 204, Charchill, London. 3rd Ed.
- Shoenfeld, R. G. (1964):** Colorimetric determination of chloride. *Clin. Chem.*, 10: 533.
- Stephen, J. E. (1989):** *Textbook of Veterinary Internal Medicine*. 3rd. Ed., W. B. Saunders Company, Philadelphia.
- Terri, A. E. and Sesin, P. G. (1958):** Colorimetric determination of potassium in serum and plasma. *Am. J. Clin. Pathol.*, 29-86.
- Trinder, P. (1951):** Colorimetric determination of sodium serum and plasma. *Analyst*, 76 : 596.
- Trinder, P. (1969):** Determination of glucose in blood using glucose oxidase with an alternative oxygen acceptor. *Ann. Clin. Biochem.*, 6: 24
- Walker, P. C.; Constable, P. D.; Morin, D. E.; Forman, J. H.; Drackly, J. K. and Thurman. J. C. (1998):** Comparison of hypertonic saline-dextran solution and lactated Ringer's solution for resuscitating severely dehydrated calves with diarrhea. *J. Am. Vet. Asso.*, 213 (1): 113-121.
- Watson, D. (1961):** A simple method for determination of serum cholesterol. *Clin. Acta.*, 5: 637.
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**Willard, M. D. (1989):** Urinary Disorders. Small Animals Clinical Diagnosis by Laboratory Methods. (M. D. Willard; G. H. Turnwald, eds.) W. B. Saunders, Philadelphia, pp: 121-153.

**Wybenga, D. R.; Digiorgio, J. and Pileggi, V. J. (1971):** Manual and automatized methods for urea measurement in serum. Clin. Chem., 17: 891-895.

**Young, D. S. (1990):** Effects of drugs on clinical laboratory test, 3rd. Ed., AACC. Press, Washington, D. C. P. 3-76-3-83.

**Zafar, M. S.; Khan, S. A.; and Rabbani, A. (1999):** Hematological studies and estimation of electrolytes in dogs exhibiting diarrheal signs. Pakistan Veterinary Journal. 19 (1) 35-39.



Table (1): Blood picture values (mean  $\pm$  SE) of diarrheic and healthy dogs.

Variable Groups	Total leucocytes count $\times 10^3/\text{cm}^3$	Lymphocytes %	Neutrophils %	Mono-cytes %	Esinophil %	Total RBCs Count $\times 10^6/\text{cm}^3$	Hemoglobin Content g/ dl	PCV %
Control group	5.58 $\pm$ 0.19	31.22 $\pm$ 0.40	62.88 $\pm$ 0.37	2.88 $\pm$ 0.30	2.22 $\pm$ 0.14	6.85 $\pm$ 0.14	15.66 $\pm$ 0.21	40.33 $\pm$ 3.21
Diarrheic group	11.96** $\pm$ 1.71	22.66* $\pm$ 3.94	69.11* $\pm$ 4.85	6.55* $\pm$ 1.43	2.11 $\pm$ 0.42	6.90 $\pm$ 0.29	16.12 $\pm$ 0.72	46.88* $\pm$ 1.08

\* Significant at (  $P < 0.05$  )\*\* Highly significant at (  $P < 0.01$  )Table (2): Serum biochemical values (mean  $\pm$  SE) of diarrheic and healthy dogs.

Variable group	Total protein (g/dL)	Albumin (g/dL)	Globulin (g/dL)	ALT ( $\mu\text{L}$ )	GDH ( $\mu\text{L}$ )	AP ( $\mu\text{L}$ )	Glucose (mg/dl)
Control group	7.50 $\pm$ 0.14	3.99 $\pm$ 0.11	3.51 $\pm$ 0.07	19.66 $\pm$ 0.92	2.42 $\pm$ 0.11	77.88 $\pm$ 13.81	101.44 $\pm$ 1.94
Diarrheic group	6.58 $\pm$ 0.27	2.64** $\pm$ 0.23	3.94 $\pm$ 0.23	44.77* $\pm$ 8.77	10.70 $\pm$ 0.11	196.44 $\pm$ 54.66	102.88 $\pm$ 4.02

Table (2): Serum biochemical values.(continue)

Variable group	Cholesterol (mg/dl)	Urea nitrogen (mg/dL)	Creatinine (mg/dL)	Bilirubin (mg/dL)	Phosph. (mmol/L)	Calcium ion (mmol/L)
Control group	215.66 $\pm$ 5.22	25.33 $\pm$ 0.89	0.84 $\pm$ 0.03	0.15 $\pm$ 0.013	1.18 $\pm$ 0.14	1.62 $\pm$ 0.24
Diarrheic group	193.3* $\pm$ 6.66	50.22** $\pm$ 3.70	0.75 $\pm$ 0.10	0.19 $\pm$ 0.016	1.10 $\pm$ 0.04	1.27** $\pm$ 0.09

\* Significant at (  $P < 0.05$  )\*\* Highly significant at (  $P < 0.01$  )

**Table (3): Mean values (mean  $\pm$  SE) of serum electrolytes, anion gap and blood gases in the sera of diarrheic and healthy dogs.**

Variable group	Sodium (mEq/L)	Potassium (mEq/L)	Chloride (mEq/L)	Anion gap	pH	Pc o <sub>2</sub> (mmHg)	Po <sub>2</sub> <sup>-</sup> (mmHg)	Hc o <sub>3</sub> <sup>-</sup> (mmol/ L)
Control group	149.77 $\pm$ 0.49	4.04 $\pm$ 0.15	100.11 $\pm$ 0.53	26.51 $\pm$ 1.02	7.37 $\pm$ 0.15	50.72 $\pm$ 2.29	44.50 $\pm$ 3.16	27.18 $\pm$ 0.97
Diarrheic group	142.66** $\pm$ 1.75	2.98** $\pm$ 0.19	83.44** $\pm$ 3.64	38.85* $\pm$ 4.53	7.27** $\pm$ 0.25	41.94** $\pm$ 1.91	55.24* $\pm$ 4.25	23.35* $\pm$ 1.21

\* Significant at ( P<0.05)

\*\* Highly significant at (P<0.01)

## الملخص العربي

### بعض الدراسات عن الإسهال المزمن في الكلاب

#### على متولى

أُجرى البحث على عدد ١٨ كلب تتراوح أعمارها من ٤-٧ سنوات من كلا الجنسين، تتبع أكاديمية الشرطة لتدريب كلاب الحراسة - منطقة سيدى بشر - الأسكندرية . وقد قسمت هذه الكلاب إلى مجموعتين كل مجموعة تحتوى على ٩ كلاب.

المجموعة الأولى كانت سليمة ظاهرياً أما الثانية فكانت تعاني من إسهال مزمن لمدة شهر تقريباً حيث تم تسجيل الأعراض الإكلينيكية وقياس التغيرات الدموية والكيميائية وغازات الدم وأيضاً تم تحديد السبب الرئيسى المسبب للإسهال المزمن هذا وقد أثبتت الدراسة النتائج التالية:  
كانت الأعراض الإكلينيكية للإسهال المزمن هي زيادة في تكرار عدد مرات التبرز (يحتوى البراز على دهون غير مهضومة أكسبته لون لامع) ، فقدان ملحوظ في الوزن والشهية ، جفاف وخمول ، زيادة معدل النبض والتنفس.

أثبت الفحص الطفيلي للبراز أن السبب الرئيسى للإسهال المزمن في هذه الكلاب هو الإصابة بديدان الإسكارس (*Toxocara Canis*) والجيارديا. (*Gardia spp.*)  
أظهر الفحص المعملى لصورة الدم زيادة معنوية في العد الكلى للكرات البيضاء ونسبة العدلات (monocytes) وحييدات النواة (monocyt) وحجم الكريات المرصوصة (PCV) ونقص معنوى في نسبة الخلايا الليمفاوية.

أثبتت التحاليل البيوكيميائية لمصل الدم نقص معنوى في قيم البروتين الكلى ، الزلال ، الكوليسترول الكلى ، الكالسيوم ن الصوديوم ، البوتاسيوم والكلوريدات وزيادة معنوية في نشاط وقيم خَميرة الألائين أمينو ترانس فيريز (ALT) ، والجلوتاميت دي هيدروجينيز (GDH) والفوسفاتيز القاعدى (AP)، اليوريا النيتروجينية والبيلروبين والأنيون جاب (Anion gap) في الكلاب المصابة بالإسهال المزمن مقارنة بالكلاب السليمة.

تبين من قياس غازات الدم أن هناك انخفاض معنوى في الأس الهيدروجيني (pH) ، غاز ثانى أكسيد الكربون والبيكربونات (metabolic acidosis) وزيادة معنوية في قيمة غاز الأوكسجين في الكلاب المصابة بالإسهال المزمن .