

ISSN: 2456-2912

VET 2023; SP-8(4): 95-97

© 2023 VET

www.veterinarypaper.com

Received: 08-05-2023

Accepted: 13-06-2023

Naveen Kumar

Ph.D. Scholar, Department of
Veterinary Public Health and
Epidemiology, Lala Lajpat Rai
University of Veterinary and
Animal Sciences, Hisar,
Haryana, India

Amit Kumar

Ph.D. Scholar, Department of
Veterinary Surgery and
Radiology, Lala Lajpat Rai
University of Veterinary and
Animal Sciences, Hisar,
Haryana, India

Tarun Gupta

Department of Veterinary
Clinical Complex, College of
Veterinary Sciences, Lala Lajpat
Rai University of Veterinary and
Animal Sciences, Hisar,
Haryana, India

Neelesh Sindhu

Department of Veterinary
Clinical Complex, College of
Veterinary Sciences, Lala Lajpat
Rai University of Veterinary and
Animal Sciences, Hisar,
Haryana, India

VK Jain

Department of Veterinary
Clinical Complex, College of
Veterinary Sciences, Lala Lajpat
Rai University of Veterinary and
Animal Sciences, Hisar,
Haryana, India

Corresponding Author:

Amit Kumar

Ph.D. Scholar, Department of
Veterinary Surgery and
Radiology, Lala Lajpat Rai
University of Veterinary and
Animal Sciences, Hisar,
Haryana, India

A clinical study on gastroenteritis in dogs in the Haryana state

Naveen Kumar, Amit Kumar, Tarun Gupta, Neelesh Sindhu and VK Jain

Abstract

Gastroenteritis refers to inflammation of stomach and intestine characterized by anorexia, lethargy, vomiting, diarrhoea, abdominal pain, dehydration etc. A total of 51 dogs presented to Teaching Veterinary Clinical Complex, LUVAS, Hisar during March to July 2022 were taken under study for prevalence estimation, haematological analysis and therapeutic management of gastroenteritis cases in the Haryana state. The study revealed that males were more affected (70.59%, n=36/51) than females (29.41%, n=15/51). 91.2% prevalence of gastroenteritis was found in dogs less than one year of age. The highest prevalence was found in German Shepherd breed followed by Labrador, mongrel, Pitbull, Rottweiler, American Bully, Mixed breed, Pomeranian, Beagle, Bull Mastiff, Dachshund, Pakistani Bully, Pug, Shih Tzu and Spitz breed. Statistical analysis of blood samples from these cases showed that there was significant association between age of dogs affected with and haemoglobin (p=0.021) and eosinophils (p=0.025). The haemorrhagic gastroenteritis is considered to be the cause of anaemia. However, there was no significant association of age with sex (p=0.095), PCV (p=0.077), total leucocyte count (p=0.543), neutrophils (p=0.234), lymphocytes (p=0.290), basophils and monocytes (p=0.058). These cases were treated with fluid therapy, antibacterial drugs and supportive treatment.

Keywords: Gastroenteritis, anorexia, lethargy, vomiting, diarrhoea, abdominal pain

1. Introduction

Gastroenteritis pertains to the inflammation of the stomach and intestines, manifesting through symptoms like loss of appetite, sluggishness, vomiting, diarrhea, abdominal discomfort, and dehydration. Gastroenteritis can be categorized as either involving bleeding or not. In dogs, common triggers for gastroenteritis encompass infections such as canine parvovirus (Appel *et al.*, 1978; Elisa M. Mazzaferro, 2020) [1, 7], canine distemper, coronavirus (Toma and Moraillon, 1980) [15], rotavirus (Barrios *et al.*, 1989) [2], canine adenovirus-2 (CaDV-2), and canine astrovirus (CaAstV) (Dema *et al.*, 2022) [6]. Additionally, bacterial culprits like *Salmonella* spp. (Chaudhary *et al.*, 1985) [5], *Escherichia coli* (Prada *et al.*, 1991) [11], *Clostridium* spp. (Turk *et al.*, 1992) [16], as well as internal parasites like *Dipylidium caninum*, *Toxocara canis*, and *Ancylostoma caninum* (Kumar *et al.*, 2001) [10], food allergies (Wills and Harvey, 1994) [9], and irritant medications (Waters *et al.*, 1992) [17] can lead to gastroenteritis. Viral sources are responsible for over 80% of canine gastroenteritis instances (Rodrigues *et al.*, 2018) [14], making it a predominant cause of infectious diarrhea in dogs. The highest occurrence of gastroenteritis was observed in canines under one year old, with a prevalence of 72.18% (Kataria *et al.*, 2020) [8]. Among young puppies, hemorrhagic gastroenteritis poses a significant threat due to complications like fluid and electrolyte imbalances, anemia, and sepsis. Gastroenteritis can be recognized by indicators like reduced packed cell volume, anemia, elevated white blood cell counts particularly neutrophilia, and eosinophilia. The present research aimed to ascertain the prevalence, conduct hematological assessments, and implement therapeutic approaches for gastroenteritis cases in dogs attended to at the Teaching Veterinary Clinical Complex, LUVAS, Hisar, Haryana state.

2. Materials and Methods

A total of 51 dogs presented to Teaching Veterinary Clinical Complex, LUVAS, Hisar with anorexia, lethargy, vomiting, diarrhoea, moderate to severe dehydration, abdominal pain etc. during the March and July 2022 were taken under study.

1 ml of blood was collected in EDTA vial from saphenous or cephalic vein for the haematological study of gastroenteritis of unknown etiology. Haemoglobin, packed cell volume (PCV), total leucocyte count (TLC) and differential leucocyte count were studied. Blood was analysed with the help of haemato-analyser (MS4Se-melet Schloesing Laboratories-France).

Haematological examination values were recorded in Microsoft Excel 2010 and value were compared with reference values as given in the table 1. Statistical analysis was carried out using IBM SPSS Statistics 23.0 software.

Table 1: Normal reference range of haematological parameters

Blood parameter	Reference range
Haemoglobin	12-18 g%
Packed Cell Volume	37-55 %
Total Leucocyte Count	6-17 × 1000 per cubic mm
Neutrophils	60-75 %
Lymphocytes	12-30 %
Monocytes	3-9 %
Eosinophils	2-10 %
Basophils	Rare

3. Result and Discussion

3.1 Sex-wise prevalence of gastroenteritis in dogs

Among all the gastroenteritis cases, males were more affected (70.59%, n=36/51) than females (29.41%, n=15/51). Behera *et al.* (2015) [3] also detected that higher number of males (86.21%) were found to be suffering from haemorrhagic gastroenteritis than females (13.79%).

Table 2: Sex-wise prevalence of gastroenteritis in dogs

Sex	No. of Cases	Prevalence
Male	36	70.59%
Female	15	29.41%
Total	51	100.00%

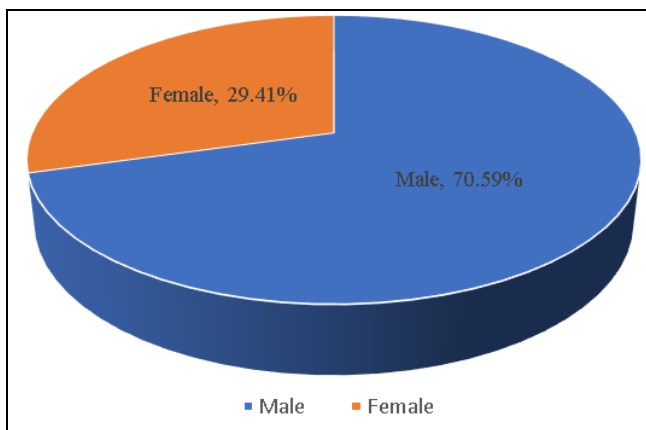


Fig 1: Sex-wise prevalence of gastroenteritis in dogs

3.2 Age-wise prevalence of gastroenteritis in dogs

Among all the cases, highest prevalence was reported in the dogs of 3-6 months of age followed by dogs of less than 3 months, 6-12 months and more than 12 months of age. Overall, 91.2% prevalence of gastroenteritis was found in dogs less than one year of age. In agreement with the findings, Bhat and coworkers (2015) [4] also reported similar prevalence in dogs less than one year of age (86.66%) in their study on canine gastroenteritis.

Table 3: Age-wise prevalence of gastroenteritis in dogs

Age	No. of Cases	Prevalence
<3 months	10	19.61%
3-6 months	29	56.87%
6-12 months	7	13.72%
>12 months	5	9.80%
Total	51	100.00%

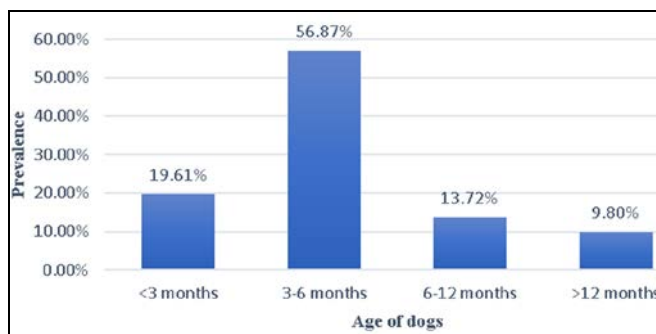


Fig 2: Age-wise prevalence of gastroenteritis in dogs

3.3 Breed-wise prevalence of gastroenteritis in dogs

Out of all the instances of gastroenteritis, the German Shepherd breed exhibited the highest occurrence, trailed by the Labrador, mongrel, Pitbull, Rottweiler, American Bully, Mixed breed, Pomeranian, Beagle, Bull Mastiff, Dachshund, Pakistani Bully, Pug, Shih Tzu, and Spitz breeds. Corroborating these results, Kataria and colleagues (2020) [8] also documented a comparable frequency of canine gastroenteritis in their research, noting similar prevalence rates in the German Shepherd, Labrador, Pitbull, and Rottweiler breeds.

Table 4: Breed-wise prevalence of gastroenteritis in dogs

Breed	No. of Cases	Prevalence
German Shepherd	12	23.53%
Labrador	10	19.61%
Mongrel	9	17.65%
Pitbull	4	7.84%
Rottweiler	3	5.88%
American Bully	2	3.92%
Mixed breed	2	3.92%
Pomeranian	2	3.92%
Beagle	1	1.96%
Bull mastiff	1	1.96%
Dachshund	1	1.96%
Pakistani Bully	1	1.96%
Pug	1	1.96%
Shih Tzu	1	1.96%
Spitz	1	1.96%
Total	51	100%

3.4 Haematological analysis of gastroenteritis in dogs

Statistical analysis of blood samples showed that there was significant association between age of dogs and haemoglobin (p=0.021) and eosinophils (p=0.025). There was decrease in haemoglobin in dogs in 72.5% of the gastroenteritis cases. Dogs of age less than 3 months, 3-6 months, 6-12 months, and more than 12 months showed 19.6%, 43.1%, 5.9% and 3.9% decrease in haemoglobin concentration. Similarly, decrease in haemoglobin was reported by Ramprabhu *et al.* (2002) [13] and Punia *et al.* (2021) [12] in haemorrhagic gastroenteritis cases.

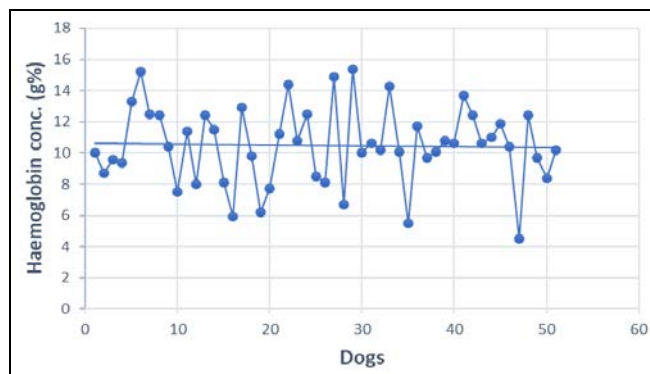


Fig 3: Line graph showing haemoglobin concentration in different gastroenteritis affected dogs

About 98% of the gastroenteritis cases showed decrease in eosinophils. Dogs suffering from gastroenteritis of age less than 3 months, 3-6 months, 6-12 months and more than 12 months showed decrease in haemoglobin concentration in 19.6%, 56.9%, 13.7% and 7.8% respectively relative to their normal reference range. Punia and co-workers (2021) [12] also reported decrease in eosinophil concentration in dogs suffering from gastroenteritis caused by canine parvovirus. PCV value was found to have decreased in 62.74% of all the gastroenteritis cases and highest decrease in PCV was detected in dogs of 3-6 months of age. Similarly, Punia *et al.* (2021) [12] also found that PCV value was found to have decreased in the haemorrhagic gastroenteritis cases in dogs. However, there was no significant association of age of gastroenteritis affected dogs with sex ($p=0.095$), PCV ($p=0.077$), total leucocyte count ($p=0.543$), neutrophils ($p=0.234$), lymphocytes ($p=0.290$) and monocytes ($p=0.058$).

4. Treatment

The treatment plan for cases of gastroenteritis consisted of using antimicrobial medications, specifically ceftriaxone-tazobactam at a dose of 25 mg per kilogram of body weight, administered intramuscularly once daily, along with Metronidazole at a dose of 15 mg per kilogram of body weight, given intravenously twice daily for a duration of seven days. Additionally, supportive and symptomatic care involved administering fluids such as Ringer's Lactate, Normal Saline Solution, or Dextrose Normal Saline, chosen based on the level of dehydration and the patient's clinical condition. Other components of the treatment included antacids (pantoprazole at a dose of 1 mg per kilogram intravenously), antiemetic medication (prochlorperazine at a dose of 0.2 mg per kilogram of body weight intramuscularly), antihistamine (pheniramine maleate at a dose of 0.5 mg per kilogram intramuscularly), fever-reducing medication (analgin at a dose of 25 mg per kilogram intramuscularly), vitamin B complex, amino acid preparation, intravenous administration of Vitamin C at a dose of 20 mg per kilogram of body weight, and antifibrinolytic agents (Tranexamic acid at a dose of 10 mg per kilogram of body weight) – all adjusted according to the animal's clinical condition.

5. Prognosis

Severe cases of gastroenteritis have grave prognosis but mild to moderate cases have fair to good prognosis with appropriate timely treatment.

6. Conclusion

Haemorrhagic gastroenteritis can be prevented by following proper prophylactic treatment. Haemorrhagic gastroenteritis which is a fatal disease condition can be treated with

appropriate therapy according to etiological agent of the disease.

7. References

1. Appel MJG, Cooper BJ, Greisen H, Carmichael LE. Status report: Canine viral enteritis. *Journal of the American Veterinary Medical Association*. 1978;173:1516-1518.
2. Barrios M, Luya MJ, Reyna A, Lorenzo M, Action J. Isolation of parvovirus from a dog with haemorrhagic gastroenteritis in cuba. *Revista Cubana-Le-Ciencias-Veterinarios*. 1989;20:297-304.
3. Behera M, Panda SK, Sahoo PK, Acharya AP, Patra RC, Das S, *et al.* Epidemiological study of canine parvovirus infection in and around Bhubaneswar, Odisha, India. *Veterinary world*. 2015;8(1):33-37.
4. Bhat AA, Wadhwa DR, Mandial RK, Sharma A, Katoch A, Sharma P. Clinico-Biochemical Alterations and Therapeutic Management of Canine Gastroenteritis. *Journal of Animal Research*. 2015;5(1):149.
5. Chaudhary SP, Kalimuddin M, Prasad G, Verma BB, Narayan KG. Observation on normal and experimental salmonellosis in dogs. *Journal of Diarrhoeal Diseases Research*. 1985;3:149-153.
6. Dema A, Tallapally M, Ganji VK, Buddala B, Kodi H, Ramidi A, *et al.* A Comprehensive Molecular Survey of Viral Pathogens Associated with Canine Gastroenteritis During. In Review. *Archives of virology*. 2022;168(2):36.
7. Mazzaferro EM. Update on Canine Parvoviral Enteritis. *The Veterinary clinics of North America. Small animal practice*. 2020;50(6):1307-1325.
8. Kataria D, Agnihotri D, Jain VK, Kumar T. A prevalence study on dogs suffering from gastroenteritis. *The Pharma Innovation Journal*. 2020;9(2):176-179.
9. Wills J, Harvey R. Diagnosis and management of food allergy and intolerance in dogs and cats. *Australian veterinary journal*. 1994;71(10):322-326.
10. Kumar S, Reddy KMP, Chaudhary PC. A rare case of mixed infestation of *D. caninum* and *A. caninum* in Doberman dogs and its therapy. *Veterinary Practitioner*. 2001;2:57-58.
11. Prada J, Baljer G, Steinruck H, Zimmermann S, Stephanm R, Beutin-L-De, *et al.* Characteristics of alpha hemolytic strains of *Escherichia coli* isolated from dogs with gastroenteritis. *Veterinary microbiology*. 1991;29:59-73.
12. Punia S, Kumar T, Agnihotri D, Sharma M. A study on effect of filgrastim in severe leucopenia associated with hemorrhagic gastroenteritis in dogs. *The Pharma Innovation Journal*. 2021;10(11):868-870.
13. Ramprabhu R, Prathaban S, Nambi AP, Dhanapalan P. Haemorrhagic gastroenteritis in dogs - A clinical profile. *The Indian Veterinary Journal*. 2002;79:374-376.
14. Rodrigues MD, Escapilato PB, Oliveira NA, Menolli KAP. Gastroenterite canina. *Ciênc. Veterinária Uni Fil*. 2018;1(2):1-10.
15. Toma B, Moraillon A. Infection of the dog by a coronavirus antigenically related to porcine transmissible gastroenteritis virus. *Recueil de medecine veterinaire*. 1980;156:464-470.
16. Turk J, Fales N, Miller M, Paer L, Feschel J, Gasser H. Enteric *Clostridium perfringens* infections associated with parvoviral enteritis in dogs. *Journal of the American Veterinary Medical Association*. 1992;200:991-994.
17. Waters CB, Hawkin EC, Knapp DW. Acute thallium toxicosis in a dog. *Journal of the American Veterinary Medical Association*. 1992;201:883-885.