



ISSN: 2456-2912

VET 2024; 9(3): 214-220

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Received: 05-03-2024

Accepted: 10-04-2024

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Medical management of hemorrhagic gastroenteritis (HGE) caused by foreign body ingestion (FBI) and canine parvovirus (CPV) infection in a Labrador retriever pup

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Abstract

Dogs with hemorrhagic diarrhea or blood-mixed fecal output contribute to a significant proportion of registered cases at many veterinary clinics. This condition is often interpreted as Hemorrhagic Gastroenteritis (HGE) which has wide range of etiological factors making it important to perform all necessary diagnostic tests to confirm the underlying etiology. A 3-month-old intact male Labrador Retriever dog was brought to Veterinary Hospital (VCC), College of Veterinary Science & Animal Husbandry, Kamdhenu University, Himmatnagar with a history of acute onset of bloody diarrhea, a habit to eat inanimate objects, vomiting, no feed intake, depression since two days, no vaccination, and no response to previous attempt for treatment. The dog was subjected to physical examination, coprological examination, special rapid diagnosis test for Canine Parvovirus (CPV) infection, radiography and the confirmatory diagnosis was made as HGE caused by Foreign Body Ingestion (FBI) and CPV infection. Medical management was decided considering the radiographic appearance of the foreign body while CPV infection and other symptoms were managed accordingly. Foreign body was removed in feces by the dog within first 24 hours of treatment and overall post-treatment recovery was evident after five days. The present paper highlights relevant aspects of clinical presentation, diagnosis, selection of treatment protocol and owner compliance for condition in dogs.

Keywords: Hemorrhagic gastroenteritis, foreign body ingestion, canine parvovirus infection, medicinal management

Introduction

The constant demand of pets is on the rise where purchase of purebred young puppies is perceived to be the common practice in India. Owners or pet-lovers often purchase young pups but they might not consider collecting thorough history including information on deworming, primary vaccination, dietary modification for a few months after purchase, actual body requirement of pups for proper growth, habits of biting/chewing/licking inanimate or inedible objects etc. This leaves a possibility of spread of infectious diseases and certain non-infectious conditions which could be easily prevented.

Clinical ailments such as Canine Parvovirus (CPV) infection, Foreign Body Ingestion (FBI), gastrointestinal parasitic infestation (e.g., ancylostomiasis) etc. are commonly reported in young pups as compared to their adult counterparts. A wide range of conditions affecting young pups often accompany diarrhea, hematochezia or melena, vomiting, dullness, depression, dehydration, weakness and anemia as common clinical findings which can result in death if left untreated. Blood-mixed diarrhea with vomiting is commonly referred to as Hemorrhagic Gastroenteritis (HGE) and it has wide range of etiological factors such as CPV infection, FBI, Rota viral infection, parasitic infestation (e.g., *Ancylostoma* spp., *Dipylidium caninum*, *Toxocara* spp.), bacterial infection (e.g., *Salmonella* spp., *Escherichia coli*, recent term Acute Hemorrhagic Diarrhea Syndrome/AHDS caused by *Clostridium* spp.), accidental or crushing injuries, Inflammatory Bowel Disease (IBD), irritant chemicals or drugs, overdose of certain drugs (e.g., meloxicam) etc. [1-11].

Such conditions can be found either as a single clinical entity or as a complex health problem necessitating implementation of appropriate diagnostic and therapeutic measures. The present case study elucidates medicinal management of CPV infection and FBI in a young Labrador Retriever puppy. Clinical, diagnostic, therapeutic and preventive measures are discussed as a reference guideline for veterinary practitioners having limited diagnostic facilities.

Case Details

A 3-month-old male Labrador Retriever dog was brought to Veterinary Hospital/Veterinary Clinical Complex (VCC) of College of Veterinary Science & Animal Husbandry, Kamdhenu University, Gandhinagar for clinical management of blood-mixed diarrhea, vomiting, lack of appetite and no-response to previous attempt of treatment.

Diagnostic approach

Anamnesis

Owner had described a list of observations including no records of vaccination, deworming, presence of blood-mixed foul smelling diarrhea, vomiting without presence of blood in vomitus, absolute lack of appetite, apparent weight loss, reluctance to move, reduced overall activity, frequent efforts to defecate, habit of eating inedible and inanimate objects, pup rummaging at potato farms having nylon ropes, plastic ropes, plastic bags, potatoes etc.

Clinical Examination

Examination from distance showed bloody diarrhea, abdominal discomfort, weakness, dullness, depression, lethargy, reluctance to move, frequent straining which led to bloody diarrhea with foul smell [Picture-1]. Detailed physical examination showed that rectal temperature, heart rate and respiration rate fell within normal range. Clinical signs such as mild paleness, dehydration, weight loss, abdominal pain, sunken eyeballs and soiling of tail and perianal region due to bloody diarrhea.



Picture 1: Three-month-old Labrador Retriever pup visibly weak, frequent straining to defecate and soiling of tail

Coprological Examination

Coprological examination revealed that fecal sample was negative for eggs/larvae/cyst of protozoa or endoparasites. The same sample was used to diagnose CPV infection by using commercially available rapid diagnostic kit – CPV immunochromatic essay kit (INgezim® CPV IC kit, INGENASA, Spain) which was positive for CPV infection

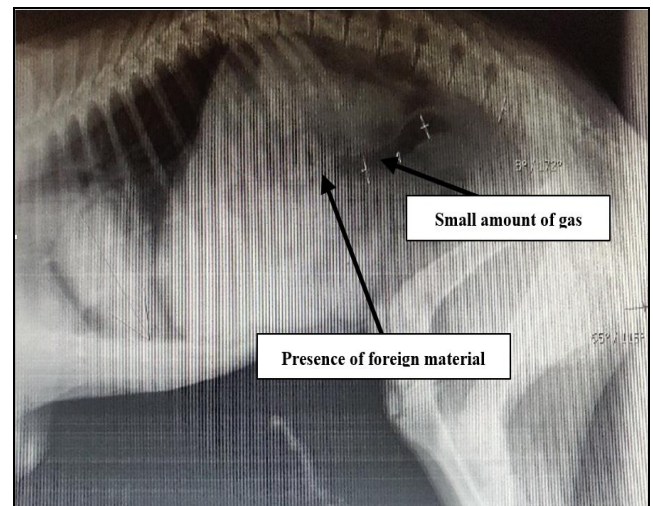
[Picture-2]. This diagnosis correlated with irregularities in primary vaccination in the pup.



Picture 2: CPV immunochromatic essay kit (INgezim® CPV IC kit, INGENASA, Spain) showing a positive result for CPV infection (black arrow)

Radiography

The pup was subjected to radiographic examination considering the history of eating inanimate objects, abdominal pain on palpation and frequent straining which is uncommon in CPV infection alone. Pup was placed in lateral position on a radiographic plate. The roentgenograph showed presence of abnormal mildly radiopaque material in gastrointestinal tract which was followed by presence of radiolucent and transparent areas indicative of emptiness/small amount of gas at distal end of gastrointestinal tract indicative of FBI [Picture-3].



Picture 3: Radiograph of dog

Based on the results of diagnostic modalities, the case was confirmed as HGE caused by CPV infection and FBI. A suitable therapeutic protocol was initiated afterwards.

Treatment and Discussion

The pup was treated by using a combination of multiple major therapeutic agents at VCC while some medicines and supplements were prescribed to the owner for use at home as shown in Table-1. Case was managed as per routine clinical practice and the owner was informed about the prognosis.

Table 1: Treatment protocol used for medical management of FBI and CPV infection

Sr. No.	Particulars	Agent/Content	Remarks
1	Intravenous (IV) Fluid therapy at VCC	Isotonic normal saline (IV; daily for 5 days, q24h)	<ul style="list-style-type: none"> For stabilization, to correct dehydration and alter effective circulating blood volume
2	IV antibiotic for gastrointestinal issues at VCC	Metronidazole (IV; daily for 5 days, q24h)	<ul style="list-style-type: none"> To counteract gastrointestinal sepsis
3	IV antibiotic to counteract secondary bacterial infection at VCC	Ceftriaxone + Tazobactam (IV, q24h, 3 days)	<ul style="list-style-type: none"> As sole alternative antibiotic with desired spectrum to prevent secondary bacterial invasion in damaged intestinal areas exaggerating due to suspected leucocyte abnormalities and lowered immunity
4	IV hemostatic at VCC	Tranexamic acid (IV, q24h, 3 days)	<ul style="list-style-type: none"> To control ongoing hemorrhage as fibrinolytic inhibitor Has more bioavailability than oral hemostatics
5	IV anti-emetic at VCC	Ondansetron (IV, q24h, 5 days)	<ul style="list-style-type: none"> As anti-emetic Reduces mechanical stress on intestinal anatomy while vomiting
6	IV antacid at VCC	Pantoprazole (IV, q24h, 5 days)	<ul style="list-style-type: none"> As antacid to have pronounced and long-lasting reduction of gastric acid production
7	Oral hemostatic at home	Ethamsylate (250 mg tablet; half tablet OID)	<ul style="list-style-type: none"> To control hemorrhage, especially capillary bleeding Can be safely administered by crushing the tablet and mixing it in one tablespoon full of water
8	Oral rehydration at home	Electrolyte powder	<ul style="list-style-type: none"> To help the dog to recover from ongoing electrolyte imbalance To reduce hospitalization for IV fluid therapy
9	Oral probiotic at home	Containing <i>Saccharomyces boulardii</i> and other contents	<ul style="list-style-type: none"> From 3rd day of first treatment to alter function and status of favorable gastrointestinal microflora, improve gut health, kill harmful bacterial pathogens Diastase, lipase, protease and papain helps to reduce gastrointestinal inflammation Amino acid, vitamins and minerals help in overall growth and development while taurine helps cognitive development
10	Oral stool softener and laxative at home	liquid paraffin and milk of magnesia (1 ml BID till foreign material is removed in feces; gentle administration)	<ul style="list-style-type: none"> Surgical management of FBI could prove life-threatening due clinical status and ongoing CPV infection; hence, medical management was performed using liquid paraffin and milk of magnesia Used as stool softener and lubricant laxative
11	Instructions to owner	<ul style="list-style-type: none"> Restriction of homemade and other diet for at least 02 days because gastrointestinal villi damaged in CPV+FBI require time to return to normal structure and function; feeding may lead to increased episodes of vomiting Avoid contact with stray dogs or other dogs to prevent spread of CPV infection Monitoring of eating behavior and prevention of eating inanimate objects to prevent further complications Observation of deviation in clinical status required for making modifications in treatment protocol, if any Monitoring frequency, color and composition of fecal output and vomit to evaluate response to ongoing treatment Collect picture of fecal output and send/show for evaluation – telehealth 	

**Picture 4:** Presence of foreign material in feces with bloody diarrhea

Diagnostic confirmation of FBI and CPV infection was possible because of availability of resources; however, careful collection of detailed history and its correlation with existing clinical signs are the only options available with veterinarians working in distant field. All cases of CPV as such do not receive specific antiviral treatment under all circumstances and all cases of FBI cannot be cured with medicines. Many cases of FBI can be managed by performing surgeries if medical management fails to provide relief. Protocol used in this case effectively reduced cost and risk factors associated with surgical procedure for management of FBI in a pup with ongoing CPV infection. The protocol used in the present case depended on clinical requirement and it cannot be used in similar cases directly without confirmation; hence, careful selection of medicines and their experience-based use by veterinarians is advised [4, 5, 8, 12, 13, 14].

The pup removed foreign body along with blood-mixed diarrhea on next day morning as seen in the photograph [Picture-4] taken and shown by the owner. Monitoring of clinical outcome by this approach shows that telehealth/telemedicine/teleguidanc plays additional role to

effectively observe health status of sick patients and correlate it with ongoing treatment ^[15]. Dog recovered uneventfully from all clinical signs of FBI & CPV infection and showed no recurrence for a period of one year. Owner compliance played pivotal role in monitoring the case.

Conclusion

Treatment protocol and approach selected for management of bloody diarrhea caused by CPV infection and FBI resulted in successful recovery due to use of suitable diagnostic modalities, selection of drugs depending on requirement and owner's compliance to the instructions given by veterinarians. Planned studies on screening of dogs with bloody diarrhea/HGE may reveal a broad range of etiological factors. Veterinary practitioners should perform all necessary attempts to diagnose underlying etiology of bloody diarrhea in dogs before treating all similar cases symptomatically.

Conflict of Interest

Authors declare no conflicts of interest with special regards to funding. The case was managed as per routine clinical practice. Medicines were used after guiding owner about prognosis and getting consent.

Acknowledgements

Authors acknowledge support from Principal; VCC in-charge; HoD, VCC; entire staff providing services at VCC and other departments of College of Veterinary Science & Animal Husbandry, KU, Himmatnagar; authorities of KU, Gandhinagar.

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