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DIAGNOSIS AND THERAPEUTIC MANAGEMENT OF INFECTIOUS CANINE HEPATITIS IN CLINICAL SETTINGS

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INTRODUCTION

Infectious canine hepatitis is a highly contagious disease of dogs with worldwide distribution and caused by Canine adenovirus-1 (family Adenoviridae, genus Mastadenovirus). The disease is characterized by slight fever and congestion of the mucous membranes to severe depression, severe reduction in white blood cells, and deficiency of blood clotting. It was first described as infectious canine hepatitis (ICH) in 1947 in Sweden by Rubarth (Rubarth, 1947). CAV-1 was first isolated in chick embryos in 1951 (Miles *et al*., 1951)

Consumption of urine, feces, or saliva from infected dogs is the most common route of infection. Recovered dogs shed virus in their urine for at least 6 months. The virus targets the lining of blood vessels, the liver, kidneys, spleen, lungs and other organs are occasionally involved. Long-term kidney damage and clouding of the cornea of the eye ("blue eye") result from immune-complex reactions after recovery from the disease.

DIAGNOSIS

1. ***Complete Blood Count:***

CBC changes include leukopenia, anemia, increased nucleated red blood cells, and moderate to severe thrombocytopenia. Initially there is a lymphopenia, after which neutropenia occurs and worsens progressively until death (Wigton *et al*., 1976).

2. ***Serum Biochemical Tests:***

Changes on the serum biochemistry profile include increased activity of serum ALT (sometimes >1000 U/L) and ALP, hyperbilirubinemia, hypoglycemia, and hypoalbuminemia (Beckett *et al*., 1964).

3. ***Urinalysis:***

The urinalysis of dogs with ICH may reveal proteinuria, hyaline and granular cylindruria, hematuria, and bilirubinuria.

4. ***Coagulation Profile:***

It includes thrombocytopenia, prolonged prothrombin time, markedly prolonged activated partial thromboplastin time and decreased factor VIII activity.

5. ***Serologic Diagnosis:***

Serologic tests are available commercially for detection of IgG and IgM against CAV-1, which include ELISA assays, hemagglutination-inhibition, and serum neutralization. (Sykes, 2014).

6. ***Antigen Detection Kits:***

Commercial rapid Antigen Detection kit is available for the diagnosis of the disease like VET Diadnostix, Ringbio, etc.

7. ***Molecular Diagnosis:***

Using the Polymerase Chain Reaction (PCR) assays for detection of CAV-1 in clinical specimens such as nasal, rectal, and ocular swabs and blood, as well as tissue obtained at necropsy, have been described. These include assays that differentiate between CAV-1 and CAV-2 (Hu *et al*., 2001).

THERAPEUTIC MANAGEMENT:

1. ***FLUID THERAPY:***

Treatment of dogs with acute ICH is purely supportive and consists primarily of fluid

therapy, including crystalloid fluids, colloids like hetastarch and blood products. Fluid therapy should be aggressive with careful monitoring and avoidance of overhydration, because of increased vascular permeability and hypoalbuminemia. Fluids should be supplemented with electrolytes and dextrose as required (Sykes, 2014).

2. NUTRITIONAL SUPPORT:

Giving frequent small meals as tolerated, optimizing nitrogen intake, and feeding the dog according to protein needs. In dogs showing signs of hepatic encephalopathy (a neuropsychiatric abnormality that causes inflammation of the brain and is related to liver failure), nitrogen should be restricted (Sykes, 2014)

3. SUPPORTIVE THERAPY:

Include antiemetics (ondansetron, metoclopromide), antacids (ranitidine and pantoprazole) and sucralfate. Parenteral nutrition may be indicated for severely affected dogs that do not tolerate enteral feeding. Dogs with DIC (Disseminated Intravascular Coagulation) may require treatment with heparin in addition to plasma. Management of hepatic encephalopathy with lactulose enemas and oral lactulose (in the absence of vomiting) (Sykes, 2014).

4. ANTIBIOTICS:

Such as amoxicillin @ 10-20mg/kg, cephalexin @ 20mg/kg, metronidazole @ 15-25mg/kg and ampicillin @ 5-10mg/kg may also be indicated. The use of parenteral broad-spectrum antimicrobial drugs should be considered for dogs with hemorrhagic gastroenteritis that may develop bacteremia as a result of bacterial translocation.

5. MISCELLANEOUS:

After fluorescein staining has shown no evidence of corneal ulceration, dogs with severe corneal edema and uveitis should be treated with topical ophthalmic preparations that contain glucocorticoids and atropine to prevent development of glaucoma.

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