

Therapeutic management of Feline Infectious Peritonitis in cat

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Abstract

This report deals with successful clinical management of Feline Infectious Peritonitis in a cat. A four month old male Persian cat was presented to the Veterinary Polyclinic, Vizianagaram in a recumbent stage having history of abdominal distension, anorexia and lethargy. There was no proper record of deworming and vaccination. Physical and clinical examination revealed congested conjunctival mucous membrane and pyrexia. Abdominal palpation revealed tensed and distended abdomen. The hemato-biochemical reports revealed elevated total bilirubin; and based on X-ray and evaluation of abdominocentesis and refractometry of abdominal fluid this case was diagnosed as Feline Infectious Peritonitis(wet form). Following the diagnosis of the case, treatment was started with an antibiotic (doxycycline), anti-malarial (mefloquine) and a steroid (prednisolone) for 10 days. Animal started recovering uneventually after treatment.

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1. Introduction

Feline Infectious Peritonitis (FIP) is an immune mediated disease in cats triggered by an infection with virus of family Coronaviridae belonging to the Genus “Feline Corona Virus” (Hartmann 2005). Feline corona virus infection and FIP occur world-wide, it could be found in domestic as well as wild cats (Addie et al. 2009), particularly in young or geriatric cats. FIP is a major cause of mortality in cats. “Feline Corona Virus” is having two biotypes namely, feline enteric corona virus (Type-1) and feline infectious peritonitis virus (Type -2) (Felten et al. 2019; Licitra et al. 2013) in which Type-1 is relatively less pathogenic and most prevalent in the field infections which mainly affects gastrointestinal tract causing mild and transient diarrhea (Pedersen 2009). On the other hand Type-2 virus occurs as a mutation from type 1 non-virulent virus which causes lethal disease FIP (Vennema et al. 1998). The risk of FIP is, primarily in the cats under 2 years of age (Worthing et al. 2012), male cats that are sexually intact (Rohrbach et al. 2001), cats housed in dense population, cats under stress, kittens with littermates and mother diagnosed with FIP, and a genetic predisposition may also exist such,

purebred cats such as Persian, Abyssinians and Himalayans are at high risk of getting infected (Pesteanu-Somogyi et al. 2006). Feline corona virus is mostly transmitted by faeco-oral route, inhalation, and fomite transmission to the young and geriatric cats (Hartmann 2005), mostly its severity depends on the virulence of the organism susceptibility of the host, and immunity of affected host.

2. Materials and methods

2.1 Case history and clinical examination

A four month old male black Persian cat was presented to the Veterinary Polyclinic, Vizianagaram with history of abdominal distension (Fig 1), anorexia, weakness and lethargy. Cat was recumbent since two days. There was no previous history of deworming and vaccination, the cat was treated in the local veterinary clinic for three days. But no improvement was seen. Physical examination revealed both superficial lymph nodes – (popliteal and submandibular) were normal. Auscultation revealed normal rhythm and amplitude of heart sounds and no adventitious sounds in lungs were found. Heart rate and respiratory rate were also normal. On clinical examination cat



Fig 1 Lateral view showing abdominal distension

had congested conjunctival mucous membrane and elevated rectal temperature (104.2 °F). Abdominal palpation revealed tensed and distended abdomen.

2.2 Methodology

Hair was clipped at area of cephalic vein from where, blood was later collected for haematological and serological values in EDTA and serum vials, respective, for laboratory examination.

Abdominocentesis: Abdomen fluid was collected by puncturing abdomen with 24G needle and fluid was collected into 5 ml disposable syringe and evaluated for the color and consistency.

Specific gravity of abdominal fluid was measured using refractometer.

2.3 Diagnosis

The hemato-biochemical reports (Table 1 and Table 2) revealed elevated total serum protein, total bilirubin and reduced albumin to globulin ratio and hyperglobulinemia. The X-ray (Fig 2) revealed no distinct abnormality in thorax but there was loss of serosal details and ground glass appearance in abdomen (Fig 3). Evaluation of abdominocentesis fluid (Fig 4)

Table 1 Haematological examination of the cat			
S. No.	Parameters	Results	Normal value (O'Brien et al. 1998)
1	Serum glutamic-oxaloacetic transaminase (IU/L)	41	28-109
2	Serum glutamic-oxalacetic transaminase (IU/L)	20	17-48
3	Total protein (g/dL)	9.2	5.4-7.8
4	Albumin (g/dL)	2.2	3.2-4.3
5	Globulins (g/dL)	7	2.9-4.7
6	Total bilirubin (mg/dL)	1.8	0.1-0.6
7	Blood urea nitrogen (mg/dL)	19.6	17-35
8	Creatinine (mg/dL)	0.74	0.8-2.1

(modified transudate to non-septic exudate) revealed clear and color was slightly turbid to white and cytology revealed round epithelial cells. Refractometry (Fig 5) of abdominal fluid revealed normal specific gravity of abdominal fluid (1.042). Based on clinical signs and laboratory findings the case was diagnosed as FIP (wet form).



Fig 2 X-ray of thorax

Table 1 Haematological examination of the cat			
S. No.	Parameters	Results	Normal value (O'Brien et al. 1998)
1	Packed Cell Volume (%)	24.4%	24-45
2	Haemoglobin (g/L)	91	80-150
3	Red Blood Cells (millions/mm ³)	5.28	5-10
4	White Blood Cells (thousands/mm ³)	13.9	5.5-19.5
5	Neutrophils	73.1%	-
6	Lymphocytes	16.6%	-
7	Monocytes	7.3%	-
8	Eosinophils	3.1%	-

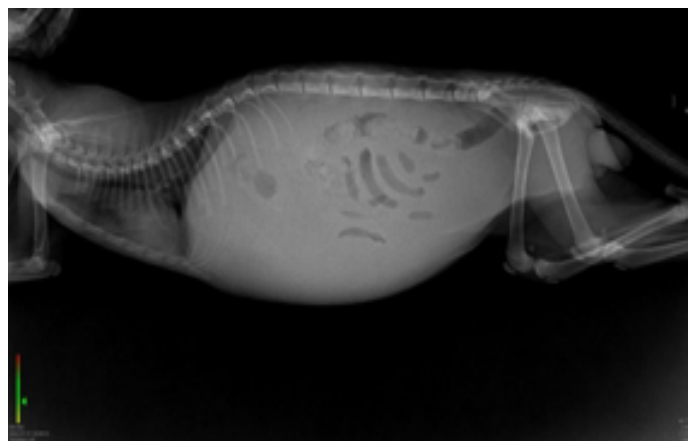


Fig 3 X-ray of abdomen showing ground glass appearance

2.4 Treatment

Treatment was advised in the form of tablets and syrups for 10 days. Mefloquine @ 62.5 mg (total Dose) Trade Name -Tab. Meflotas (250 mg) (1/10 weekly twice) for 4 weeks.

Combination of Furosemide and spironolactone @ 0.5 mg/kg body weight, Trade name- Tab Lasilactone (50 mg) (1/5 tab) BID for 10 days;

Platelet enhancer Tab. Yacasyn (1/4 tab SID) for 10 days;

Syrup kid Prednisolone @0.1 mg/kg body weight (2 ml BID).

Syrup Rajdox (doxycycline @5 mg/kg body weight (2 ml SID)

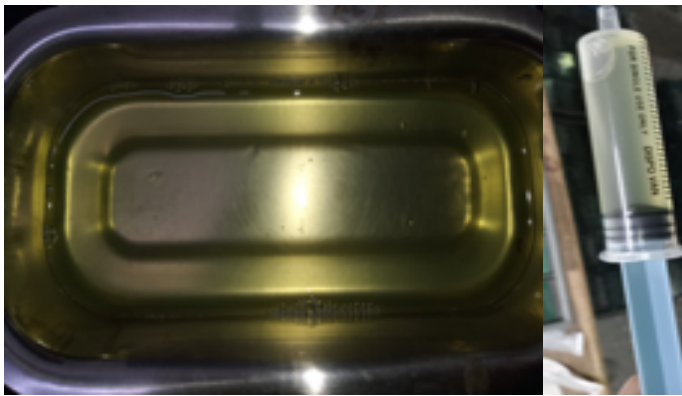


Fig 4 Evaluation of abdominocentesis fluid

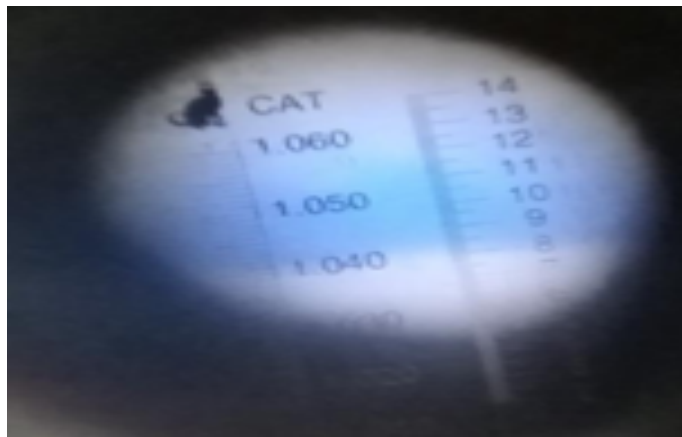


Fig 5 Refractometry of abdominal fluid

3. Results

There was no significant improvement noticed in the condition during first two days, but after 5 days of treatment cat showed slight improvement, and started taking some food. After 10 days of treatment, the condition of animal significantly improved. Congested conjunctival membrane started appearing pale and abdominal distension also reduced slowly, hemato-biochemical reports after 30 days revealed normal values as well. Cat recovered well after 30 days of treatment.

4. Discussion

Feline corona virus, causing Feline infectious peritonitis, is a mutant of feline enteric coronavirus. When a cat is infected by feline enteric corona virus it invades enteric cells and cause diarrhoea. Infected cat shed virus through faeces. Most of them are intermittent shedders while a few become chronic shedders and are responsible for re infection (Gut et al. 2002). When the body's immune system fail to suppress the virus in the intestine then replication will increase and so the virulence. Other than this are many factors that promote virus replication such as, young age, concurrent infections, and genetic predisposition (Foley et al. 1997). It is mostly seen in young kittens because immune system is not completely developed (Addie et al. 1995).

In the case presented here, a kitten with wet form of infectious peritonitis with a major sign of abdominal distension was observed and similar observations were made in earlier studies (Hartman et al. 2003, 2002). The other signs similar to this studies were icterus, bright and alert condition of animal with increased temperature and inappetence. Unlike the present study earlier study has revealed decreased packed cell volume, neutrophilia, lymphopenia, thrombocytopenia, (Felten et al. 2019), which are more common in cats with effusion. Similar to the present case serological values revealed hyperbilirubinemia (Hartmann 2005), an increase in globulin and decrease in albumin levels in blood which resulted in decreased albumin to globulin ratio (Rohrer et al. 1994; Shelly et al. 1998) and hyperproteinemia (Hartmann et al. 2005). Fluid that was collected by abdominocentesis was clear and had high protein content similar to observations have been made earlier (Pederson 2014).

Treatment followed for this case was syrup prednisolone @ 2 ml BID, the combination of furosemide (diuretic) and spironolactone which reduce the excess fluid levels in the body (ascites condition) while maintaining potassium balance, and platelet enhancers as supplementation. Mefloquine, an anti-malarial drug was used as a prophylactic measure and it has been demonstrated that Mefloquine substantially reduce the viral load of FIPV in Infected Crandell Feline Kidney cells without cytotoxic effects, its inhibition of cytopathic effect and viral replication at low concentrations supports further investigation of this drug as a potential antiviral therapeutic agent for the cat with FIP (Yu et al. 2020). Therefore, Tab. Meflotas (250 mg) (1/10 tab weekly twice) was used for 4 weeks to give better result in this case.

5. Conclusions

Proper vaccination against FIP and better hygiene are necessary for controlling this infection. The treatment against FIP becomes more promising by use of Meflotas as antiviral agent, diuretics, and platelet enhancers, along with antibiotics and steroids.

Declarations

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Ethical approval: Not applicable

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