



Feline Panleucopenia in Bengal Cats at Hasanuddin University Animal Educational Hospital

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Abstract

Feline panleukopenia is an infectious disease that attacks cats, especially cats that have not been vaccinated at a young age. The main cause of this disease is feline panleukopenia virus which belongs to the Parvoviridae family. Panleukopenia virus is a non-enveloped single-stranded DNA virus and can cause fever, hemorrhagic gastroenteritis, leukopenia, vomiting, depression, dehydration and diarrhea with a high mortality rate. The purpose of writing this case study is to determine the description and treatment of the disease in cases of feline panleukopenia in cats using diagnostic methods including history taking, physical examination and further examination. The results of the physical examination showed that the cat had decreased appetite. Body weight was 2.6 kg and rectal temperature was 38.6 °C. The patient also experienced dehydration which was indicated by checking skin turgor which reached >2 seconds and visible nictitans membranes. Then, inflammation of the ears, anorexia, vomiting and diarrhea were found. Treatment is carried out by administering fluid therapy, antibiotics, anti-diarrhea, anti-vomiting and multivitamins.

Keywords: Feline Panleukopenia, FPV, Cat, Virus

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Introduction

The case of Feline Panleukopenia was first reported in the 1920s by Verge and Christoforoni (Putri et al., 2020). Feline panleukopenia is an infectious disease that can attack cats, especially cats that have not been vaccinated at a young age. The main cause of this disease is feline panleukopenia virus which belongs to the genus Protoparvovirus and in the Parvoviridae family (Purnamaningsih et al., 2020). The panleukopenia virus belongs to a group of viruses that have single-stranded, non-enveloped DNA and can cause fever, hemorrhagic gastroenteritis, leukopenia, vomiting, depression, dehydration and diarrhea with a high mortality rate. The incubation period for FPV ranges from 5 to 9 days and if other infectious agents are found it will be complicated resulting in sepsis, dehydration, disseminated intravascular coagulopathy and even death (Rehme et al., 2022).

The clinical symptoms that occur vary widely, ranging from subclinical to peracute

infections characterized by sudden death. Infected cats can die due to complications from secondary bacterial infections, sepsis, dehydration, and disseminated intravascular coagulopathy (DIC) (Putri et al., 2020). The morbidity and mortality rate for this virus is quite high, especially in young cats under 12 weeks of age. Acute feline panleukopenia has a mortality rate of 25-90% and reaches 100% in peracute infections (Widyasanti and Putra, 2023).

Transmission or transmission of the panleukopenia virus in cats can occur directly or indirectly due to contamination from sufferers through feed, vomit, feces, urine, saliva, or other objects (Mahendra et al., 2020) . The panleukopenia virus enters the body and replicates in actively dividing cells such as the spinal cord, lymphoid tissue, small intestinal epithelium, cerebellum, and retina in neonatal cats and can cause leukopenia, ataxia, movement incoordination, and visual impairment in young animals (Awad et al., 2018).

Feline Panleukopenia Virus infection starts from the entry of the virus in the secretions of infected animals such as feces, vomit, urine and saliva. Feline Panleukopenia Virus enters the new host's body orally, infection and viral replication will begin in the oropharyngeal and gastrointestinal lymphoid tissue. Within 2 to 7 days the virus in the blood appears and the virus is distributed throughout the body, especially to the intestinal crypt cells. The virus is located in the epithelium of the tongue, mouth, and mucosa of the esophagus, small intestine, and lymphoid tissue. The virus then infects and damages the germ cells of the intestinal crypts and causes damage to the intestinal villi, resulting in diarrhea, vomiting, intestinal bleeding and subsequent bacterial invasion (Purnamaningsih et al., 2020).

Diagnosis of Feline Panleukopenia Virus in cats can be done through information from the owner in the form of anamnesis, clinical signs, and supporting examinations such as test kits, blood tests or using PCR (Hermawan et al., 2023). The body's immune system in cats at a young age is very dependent on maternal antibodies which are obtained through milk (colostrum) from the mother which contains antibodies. The maternal titer of antibodies obtained from the mother can protect the cat's body for 6 to 8 weeks. Therefore, giving vaccines at a young age (above eight weeks) to cats is highly recommended to form antibodies against Feline Panleukopenia Virus and other diseases as an initial preventive measure. If a cat has been infected with the Feline Panleukopenia Virus , then the treatment must be fast and appropriate, especially for young cats that have not been vaccinated against the Feline Panleukopenia Virus . Young cats under 12 weeks have a morbidity and mortality rate ranging from 25 to 90% and can reach 100% if the infection is peracute. This is important in handling young cats infected with Feline Panleukopenia Virus with a low recovery rate (Hartmann, 2017).

The therapy given aims to first treat the effects on the body due to Feline Panleukopenia Virus infection. After that, the only treatment given is in the form of antibiotics, multivitamins and parenteral nutrition in the form of an infusion. Broad-spectrum antibiotic therapy (e.g., ampicillin, cephalosporin, ticarcillin, or ticarcillin/clavulanate) may be used due to the occurrence of leukopenia and a high risk of systemic bacterial infections (Kusumawardhani et al., 2019).

Materials and Methods

A client came to the Hasanuddin University Veterinary Teaching Hospital on June 4 2023 with a Bengal cat named Simba, male and unsterilized, 4 months old and weighing 2.6 kg. Simba's condition does not want to eat, he has been vomiting and diarrhea since the day before, weak, lethargic and has inflammation of his ears. The patient has a history of having been given worm medicine, but has not been given a vaccine. Apart from that, there is visible blood in the feces and the feces have a distinctive odor, as well as dehydration. The

follow-up examination carried out was a rapid test with positive results for panleukopenia. Therefore, the diagnosis is made based on the history, physical examination and follow-up examination. Prognosis: Dubius. Therapy and Treatment: Lactated Ringer fluid, Neurosanbe, Curcuma® and Imboost® , antibiotic Promuba, anti-diarrhea Guanistrep and anti-vomiting Sucralfate.



Figure 1 . Cat Patients with clinical symptoms of feline panleukopenia virus (bloody diarrhea)

Results and Discussion

A male Bengal cat named Simba, male and unsterilized, is 4 months old with a history of not having been vaccinated and was released into the wild. Physical examination results on the cat Simba, with a body weight of 2.6 kg, a rectal temperature of 38.6 °C. Patients experiencing dehydration are characterized by skin turgor reaching >2 seconds. Then there is diarrhea and blood in the feces, vomiting, anorexia and inflammation of the ears. The patient had a characteristic fecal odor when hospitalized. The clinical findings obtained suggest infection with Feline Panleukopenia.



Figure 2. Bengal cat (Simba) infected with Panleukopenia Virus

Cases of feline panleukopenia in young cats reach 50% to 90% of the total incidence of feline panleukopenia at all ages with a susceptible age of four to eight months (Mahendra et al ., 2020). The percentage of incidence of Feline Panleukopenia Virus infection in male cats is higher than in female cats. The higher incidence of Feline Panleukopenia Virus infection in male cats is likely due to the wider home range of male cats. The home range of male cats can reach 2 times farther than that of female cats (Purnamaningsih et al., 2020). Skin elasticity is measured by observing how quickly the removed section of skin returns to its original position after being removed. Skin elasticity is more clearly visible in young cats when compared to older cats, this is an important thing in measuring dehydration status. In young cats the skin will return to its original position in less than 0.5 seconds, whereas in old cats the skin will return to its original position in up to 1 second (Lukiswanto and Yuniarti, 2013).

Physical examination aims to help establish a diagnosis of patients who are indicated to have

health problems. Physical examination of animals includes evaluation of temperature, pulsus, respiration, skin, mucous membranes, body weight and others (Marlissa et al., 2022). Clinical symptoms are symptoms that an animal displays by indicating abnormalities in the function of the animal's own body organs. The most obvious clinical symptoms seen in feline panleukopenia virus cases in cats at the Hasanudin University Veterinary Hospital were vomiting, diarrhea with bloody feces and decreased appetite. This is in accordance with the statement of Isaya et al. (2021), who said that Feline Panleukopenia Virus is an infectious disease that can attack cats with symptoms of leukopenia, vomiting, depression, dehydration and diarrhea.

According to Marlissa et al. (2022), the vomiting that occurs is not related to the food the cat consumes, but is due to infection with the Feline Panleukopenia Virus which attacks the cell crypts of the small intestine, causing inflammation in the intestine. Feline Panleukopenia Virus will damage the intestinal cell crypts which contain intestinal stem cells. These cells are useful for producing new intestinal cells where these cells are useful for continuous regeneration of intestinal cells because intestinal cells themselves have a lifespan of only 10 days. Viral infection of the small intestinal epithelium will cause lysis followed by bleeding, shortening of the villi of the duodenum, jejunum and ileum. Damage to the epithelium can stimulate the emergence of secondary infections by *Escherichia coli* bacteria. These bacteria produce endotoxins which will worsen the level of diarrhea that occurs (Winaya et al., 2014).

After a physical examination, the cat is advised to undergo further examination to determine the cause of FPV. Further examination that can be carried out is by using the Antigen® rapid FPV Ag test with the ICG method or rapid test. This rapid test is a chromatographic immunoassay used for qualitative diagnosis of Feline antigens. panleukopenia virus in feces of infected cats with a fairly high level of accuracy.



Figure 3. The results of the Antigen® rapid FPV Ag test showed positive results for panleukopenia.

Examination using the Antigen® rapid FPV Ag test shows a positive result if there is a red line on the T line, whereas the result will be negative if there is a red line on the C line only. The procedure for using the Antigen® rapid FPV Ag test is by taking a stool sample with a cotton swab, then mixing it with diluent and stirring for 3 minutes. After that, the mixed diluent is dropped into the rapid test kit and waited 15 minutes to see whether the results are positive or negative (Albab et al., 2022).

The results obtained from the Bengal cat (Simba) feces sample were that there was a red line on the T line which indicated positive infection with the feline panleukopenia virus. Diagnosis of the

clinical symptoms that appear is the main factor in determining whether a disease is panleukopenia or not. Panleukopenia has several differential diagnoses such as enteritis, poisoning and toxoplasmosis (Mahendra et al., 2020).

Apart from using the rapid test method, supporting examinations can also be carried out using a complete blood count or CBC method to confirm the diagnosis.

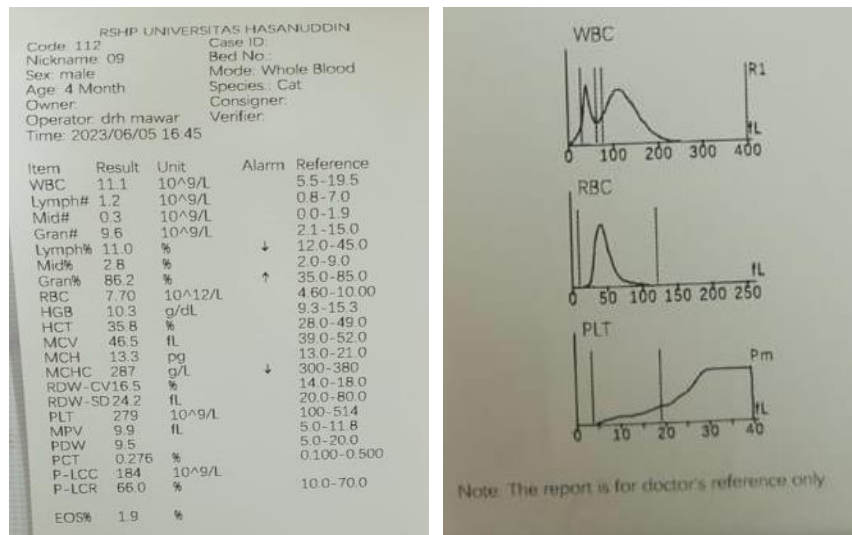


Figure 4. Results of CBC examination on Bengal cats (Simba)

The specific symptom of feline panleukopenia is a decrease in total leukocytes. However, in cat cases there has not been a decrease in leukocytes, this can occur because the infection is still in the early stages where the concentration of virus in the body is not high and the virus has not yet attacked the cat's immune system, so the leukocytes are still normal.

The treatment given is Ringer Lactate (RL) fluid therapy as a treatment for dehydration and balancing body fluids with a dose of 278 ml/day (1 drop/5 seconds) intravenously for 3 days, apart from fluid therapy, supportive therapy is also given such as vitamins to increase appetite, namely Curcuma and Imboost are immune supplements that are immunostimulants to maintain body health. Curcuma+Imboost is given at 0.5 ml/kg BW PO q12h (Listiani and Susilawati, 2019). Administration of antidiarrheal Guanistrep 0.5 ml/kg BW PO q12h. Promuba antibiotics are given to treat anaerobic enteric and systemic infections at a dose of 0.5 ml/kg BW q12h PO. Administration of anti-vomiting Sucralfate at a dose of 0.5 ml/kg BW q12h PO (Papich, 2016).

Conclusion

Feline panleukopenia is a disease that often infects cats, especially cats that have not been vaccinated, the main cause of this disease is Felines panleukopenia viruses . Clinical signs of infected cats include vomiting, bloody diarrhea and no appetite. Diagnosis can be made by anamnesis, physical examination and further examination. Treatment can be done by administering fluid therapy, antibiotics, anti-emetics and anti-diarrhea.

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