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CASE STUDY OF PANLEUKOPENIA IN A CAT AT JAKARTA ANIMAL CLINIC

Sebuah Studi Kasus Panleukopenia Pada Kucing di Klinik Hewan Jakarta

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Abstract

Cats are carnivorous mammals that are susceptible to various infectious diseases, one of which is feline panleukopenia. Feline panleukopenia virus (FPV) infection is caused by a member of the Parvoviridae family, a non-enveloped, single-stranded DNA virus with a single antigenic serotype. This case report aimed to detect FPV infection in a cat using a rapid antigen test and hematological analysis. A male Maine Coon cat named Susu, weighing 5.1 kg, was presented to a veterinary clinic on November 5, 2025, for a routine health examination. According to the owner, the cat had not received deworming treatment for approximately one year. Physical examination revealed a body temperature of 39.3°C and an overall normal clinical condition. No abnormalities were observed in the respiratory system or oral cavity. However, the feces were slightly loose, and tapeworm segments were detected. Further testing using a rapid FPV antigen test yielded a positive result. Despite this finding, the cat did not exhibit the typical clinical signs of feline panleukopenia, such as lethargy, vomiting, or severe diarrhea. This discrepancy may indicate a subclinical infection, an early stage of disease, or a false-positive rapid test result. Therefore, additional diagnostic testing, such as polymerase chain reaction (PCR), is recommended to confirm the diagnosis. Case management consisted of supportive and symptomatic treatment, along with therapy targeting the parasitic infection. Improved hygiene measures and close monitoring were also recommended to minimize the risk of disease progression and transmission.

Keywords: Cat, feline panleukopenia virus, hematology, rapid antigen test, subclinical infection

Abstrak

Kucing merupakan mamalia karnivora yang rentan terhadap penyakit infeksi, salah satunya feline panleukopenia. Feline panleukopenia adalah penyakit infeksius yang disebabkan oleh *Feline Panleukopenia Virus* (FPV). FPV merupakan virus DNA untai tunggal tanpa selubung dengan satu serotipe antigen yang termasuk dalam famili parvoviridae. Pemeriksaan dilakukan untuk mendeteksi adanya infeksi FPV pada kucing menggunakan *rapid test*

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antigen dan pemeriksaan hematologi. Seekor kucing ras *Maine Coon* bernama Susu, berjenis kelamin jantan dengan berat badan 5,1 kg, dibawa ke klinik hewan pada tanggal 5 November 2025 untuk pemeriksaan kesehatan rutin. Berdasarkan anamnesis, kucing tersebut sudah hampir satu tahun tidak diberikan obat cacing. Hasil pemeriksaan klinis menunjukkan suhu tubuh 39,3 ºC, kondisi umum baik, tidak ditemukan gangguan pada sistem pernapasan maupun rongga mulut, namun feses teramati sedikit cair dan ditemukan adanya cacing pita. Pemeriksaan penunjang menggunakan *rapid test antigen* FPV menunjukkan hasil positif. Meskipun demikian, secara klinis kucing tidak menunjukkan gejala khas feline panleukopenia seperti depresi, muntah, atau diare berat. Temuan ini mengindikasikan kemungkinan adanya infeksi subklinis, fase awal infeksi, atau hasil positif palsu dari *rapid test*. Oleh karena itu, diperlukan pemeriksaan lanjutan seperti *polymerase chain reaction* (PCR) untuk mengonfirmasi diagnosis. Penanganan kasus dilakukan secara suportif dan simptomatik, serta disertai pengendalian infeksi parasit yang ditemukan. Selain itu, peningkatan manajemen kebersihan dan pemantauan kondisi hewan sangat dianjurkan untuk mencegah perkembangan penyakit dan penularan.

Kata kunci: *Feline panleukopenia virus,* hematologi, infeksi subklinis, infeksi subklinis, *rapid test antigen*

INTRODUCTION

Cats are carnivorous mammals that are susceptible to various diseases, including rabies, fungal infections, otitis, pyometra, flea infestations, and feline panleukopenia (FPV) infection, the causative agent of feline panleukopenia (Kiselev *et al.*, 2023). FPV is a non-enveloped, single-stranded DNA virus with a single antigenic serotype belonging to the family Parvoviridae (Purnamaningsih *et al.*, 2022). Infected cats typically exhibit clinical signs such as anorexia, vomiting, diarrhea, and leukopenia, with varying degrees of severity (Hussein & Al Bayati, 2016). According to Syarifuddin *et al.* (2025), FPV is highly contagious and associated with a high mortality rate in cats, with common clinical manifestations including leukopenia, vomiting, dehydration, and diarrhea. Similar to canine distemper, feline panleukopenia is characterized by high morbidity and mortality rates and can be fatal in unvaccinated young cats (Pandey, 2022).

Feline panleukopenia is highly transmissible and can spread through direct contact with infected animals or contaminated environments. The disease is also difficult to eradicate because the virus can survive in the environment for extended periods (Abdel-Baky & Ibrahim, 2022). Diagnosis is established based on several considerations, including the patient's clinical presentation. Diagnostic methods for FPV include rapid test kits, complete blood count analysis, and PCR (Hermawan *et al.*, 2023). Commercially available rapid test kits are based on either latex agglutination or immunochromatographic assays and are designed to detect FPV antigens as well as CPV-2a to CPV-2c. PCR using blood or fecal samples may serve as an alternative diagnostic method in suspected FPV cases, particularly when sample volume is limited (Albab *et al.*, 2022).

Given its outbreak potential in animal housing environments, additional case reports describing the diagnostic process, clinical manifestations, and management of FPV infections in veterinary practice remain valuable. Although numerous studies and case reports on feline panleukopenia have been published in Indonesia, further investigations are still needed to support early detection and disease control. Therefore, this case study aimed to identify and confirm FPV infection in a cat based on clinical findings and supporting diagnostic results, as well as to describe the case management implemented in a veterinary clinic to support the early detection and control of feline panleukopenia.

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RESEARCH METHODS

Case History and Anamnesis

A male Maine Coon cat named Susu was presented to a veterinary clinic on Wednesday, November 5, 2025. The cat had a white coat and weighed 5.1 kg. According to the owner, Susu was brought to the clinic for a routine medical check-up and had not received deworming treatment for nearly one year.

Clinical Examination

Physical examination revealed a body weight of 5.1 kg and a body temperature of 39.3°C. The skin, oral cavity, and respiratory system were evaluated through inspection and auscultation. The skin appeared normal, no signs of oral infection or inflammation were observed, and the respiratory system was unremarkable. Fecal examination revealed the presence of tapeworms.

Rapid Antigen Test

Rapid antigen testing was performed using the Antigen® Rapid FPV Ag Test Kit (Vechek, Hangzhou AllTest Biotech Co., Ltd., China). A fecal sample was collected by inserting a sterile swab into the rectum. The swab was then mixed with the provided buffer solution and allowed to stand briefly. Subsequently, 3–4 drops of the supernatant were applied to the sample well of the test device. The test was considered valid when the supernatant migrated across the control (C) and test (T) regions of the strip. Results were interpreted within 5–10 minutes.

Hematological Examination

Hematological analysis was performed using 1 mL of whole blood. Immediately after collection, the blood sample was transferred into a tube containing EDTA to prevent coagulation. The tube was gently inverted several times to ensure adequate mixing of the blood and anticoagulant while minimizing cellular damage. The sample was then analyzed using an automated hematology analyzer to determine erythrocyte count, leukocyte count, hemoglobin concentration, hematocrit value, erythrocyte indices, and platelet count. Complete blood count analysis was performed using a hematology analyzer (IDEXX Laboratories, Westbrook, Maine, USA).

RESULTS AND DISCUSSION

Results

Clinical examination of Susu revealed slightly loose feces and a mildly elevated body temperature. Rapid antigen testing yielded a positive result for FPV infection. The test result was indicated by the appearance of two red bands at the test (T) and control (C) lines (Figure 1). Hematological analysis performed as a supporting diagnostic examination showed that all measured blood parameters were within normal reference ranges (Table 1).

Diagnosis and Prognosis

Based on the clinical findings, anamnesis, and positive rapid antigen test result, Susu was diagnosed with FPV infection. Considering the absence of severe clinical signs and the normal hematological findings, the prognosis was considered favorable, and clinical improvement was expected in the near term.

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Discussion

FPV is a highly contagious infection in cats that is commonly associated with clinical signs such as vomiting, diarrhea, dehydration, depression, and leukopenia (Hermawan *et al.*, 2023). The virus belongs to the genus *Protoparvovirus* within the family *Parvoviridae*, which also includes CPV and MVM. Transmission occurs through both direct contact with infected cats and indirect exposure to contaminated fomites, including cages, feeding bowls, and water containers. Mechanical transmission may also occur via flies and human handlers. During infection, the virus is shed in the feces, urine, and saliva of infected cats. Vaccination and proper hygiene management remain the primary measures for preventing the disease (Sun *et al.*, 2019).

Hematological examination of Susu showed that all blood parameters were within normal ranges, with no evidence of leukopenia typically associated with FPV infection. This finding may indicate that the infection was in its early stage, before substantial damage to the bone marrow and lymphoid tissues had occurred. Clinical signs of feline panleukopenia generally develop within 2–10 days after infection (Sadikin *et al.*, 2025). In pregnant cats, FPV can cross the placenta and may result in embryonic resorption, fetal mummification, abortion, or stillbirth (Rizaluddin *et al.*, 2024).

Fecal testing using a rapid antigen test yielded a positive result for FPV infection (Figure 1). Rapid antigen tests provide results within a relatively short time and have reported sensitivity and specificity values of 95.8% and 99.75%, respectively. Detection of FPV antigens is based on an immunochromatographic lateral flow assay (LFA) (Priambudi *et al.*, 2022). During the test procedure, the fecal sample migrates through the conjugate pad, where antigen-antibody binding occurs. The resulting antigen-antibody complexes continue to migrate along the membrane and generate a visible reaction at the designated test line (Marlissa *et al.*, 2022).

Case management for Susu consisted of supportive and symptomatic therapy. Fluid replacement with Lactated Ringer's Solution may be indicated to correct dehydration and maintain tissue perfusion. Lactated Ringer's Solution is a crystalloid fluid with an electrolyte composition similar to plasma and is widely used for fluid replacement therapy. The solution contains lactate, which serves as a bicarbonate precursor and contributes to the maintenance of acid-base balance (Alegria *et al.*, 2024). Administration of immune-supportive supplements may help stimulate the immune response. Antibiotic therapy may also be considered to prevent or manage secondary bacterial infections associated with FPV-induced tissue damage. In cases complicated by anemia, vitamin B12 supplementation may be administered to support erythropoiesis and hemoglobin synthesis (Utomo *et al.*, 2024).

CONCLUSION AND SUGGESTIONS

Conclusion

This case report demonstrates the use of rapid antigen testing and hematological examination as supporting diagnostic tools for the detection of FPV infection in cats. In this case, a positive rapid antigen test result was obtained despite the absence of significant hematological abnormalities. Supportive and symptomatic therapy were implemented as part of the case management strategy.

Suggestions

Further diagnostic testing, particularly PCR, is recommended to confirm FPV infection and improve diagnostic accuracy. In addition, maintaining good hygiene and sanitation practices is essential to reduce the risk of infection and prevent the spread of infectious diseases among companion animals.

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Table

Table 1. Hematological examination results

Parameter	Results	Reference Interval*	Status
RBC	11.37 x 10^{12}/L	6.54 – 12.20	Normal
HCT	45.8%	30.3 – 52.3	Normal
HGB	16.1 g/dL	9.8 – 16.2	Normal
MCV	40.3 fL	35.9 – 53.1	Normal
MCH	14.2 pg	11.8 – 17.3	Normal
MCHC	35.2 g/dL	28.1 – 35.8	Normal
RDW	26.2%	15.0 – 27.0	Normal
WBC	11.47 x 10^9/L	2.87 – 17.02	Normal
NEU	8.92 x 10^9/L	2.30 – 10.29	Normal
LYM	1.99 x 10^9/L	0.92 – 6.88	Normal
MONO	0.16 x 10^9/L	0.05 – 0.67	Normal
EOS	0.30 x 10^9/L	0.17 – 1.57	Normal
BASO	0.10 x 10^9/L	0.01 – 0.26	Normal
PLT	230 K/µL	151 – 600	Normal
MPV	16.7 fL	11.4 – 21.6	Normal
PCT	0.38%	0.17 – 0.86	Normal

Abbreviations: RBC (Red Blood Cell), HCT (Hematocrit), HGB (Hemoglobin), MCV (Mean Corpuscular Volume), MCH (Mean Corpuscular Hemoglobin), MCHC (Mean Corpuscular Hemoglobin Concentration), RDW (Red Cell Distribution Width), WBC (White Blood Cell), NEU (Neutrophil), LYM (Lymphocyte), MONO (Monocyte), EOS (Eosinophil), BASO (Basophil), PLT (Platelet), MPV (Mean Platelet Volume), and PCT (Plateletcrit). *Reference: IDEXX Laboratories, Westbrook, Maine, USA.: IDEXX Laboratories, Westbrook, Maine, USA.

Figure

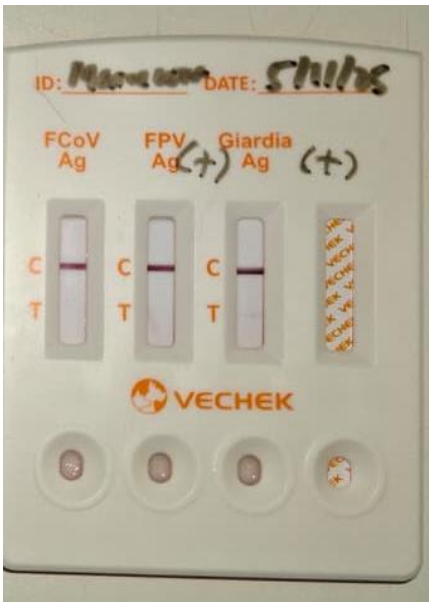

Figure 1. Rapid Antigen Test Result Showing a Positive FPV Infection. The test procedure was considered valid when the supernatant migrated across both the control (C) and test (T) regions of the strip. Results were interpreted within 5–10 minutes. A positive result was indicated by the presence of two red bands at the control (C) and test (T) lines.

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