

DAFTAR PUSTAKA

- Albab, U., Febriant, A., Hermawan, I.P. and Kurnianto, A., 2022. Studi kasus: Feline panleukopenia virus pada kucing abel. *VITEK: Bidang Kedokteran Hewan*, 12(2), pp.1-4.
- Albarellos, G.A., Kreil, V.E. dan Landoni, M.F., 2007. Pharmacokinetics of ceftriaxone after intravenous, intramuscular and subcutaneous administration to domestic cats. *Journal of veterinary pharmacology and therapeutics*, 30(4), pp.345-352.
- Dawson S, Willoughby K, Gaskell RM, Wood G, Chalmers WSK. 2001. A field trial to assess the effect of vaccination against feline herpesvirus, feline calicivirus and feline panleukopenia virus in 6-week-old kittens. *Journal of Feline Medicine Surgery* 3: 17-22
- Jayalie VF, Made Ngurah S, Cynthia W, Leonard N. 2015. Prinsip imunokromatografi imunoglobulin a saliva sebagai metode deteksi dini dan cepat virus dengue secara noninvasif. *Jurnal Mahasiswa Kedokteran Indonesia* 2(3): 21-28
- Kahn CM. 2010. *The Merck Veterinary Manual. 10th Ed. Inc.* New Jersey. Merck and Co. 345-351.
- Krause, M. dan Tacke, S., 2010. Clinical application of tolfenamic acid (Tolfedine®) in dogs and cats. *Kleintierpraxis*, 55(9), pp.484-489.
- Manayi, A., Vazirian, M. and Saeidnia, S., 2015. Echinacea purpurea: Pharmacology, phytochemistry and analysis methods. *Pharmacognosy reviews*, 9(17), p.63.
- Marlissa, F.C.M., Suartha, I.N. and Widyastuti, S.K., Laporan Kasus: Penanganan Panleukopenia pada Kucing Kampung Usia Muda yang Belum Pernah Divaksinasi. *IMV*. 11(4), pp.206-213.
- Putri, R., Sumiarto, B. and Mulyani, G.T., 2020. Faktor Risiko Feline Panleukopenia pada Kucing di Daerah Istimewa Yogyakarta. *Jurnal Sain Veteriner*, 38(3), pp.206-213.
- Tilley P and Smith JR. 2011. *Blackwell's Five-Minute Veterinary Consult: Canine and Feline*. 5th ed. John Wiley & Sons. Inc.
- Truyen, U., Addie, D., Belák, S., Boucraut-Baralon, C., Egberink, H., Frymus, T., Gruffydd-Jones, T., Hartmann, K., Hosie, M.J., Lloret, A. and Lutz, H., 2009. Feline panleukopenia. ABCD guidelines on prevention and management. *Journal of Feline Medicine & Surgery*, 11(7), pp.538-546.
- Ulum, M.M., Zubaidah, M. dan Arief, M., 2018, April. The influence of supplemented Curcuma in feed formulation to improve growth rate and feed efficiency of catfish (*Clarias* sp.). *IOP Conference Series: Earth and Environmental Science* 137(1): 12007.

Ye, J.H., Ponnudurai, R. and Schaefer, R., 2001. Ondansetron: a selective 5-HT₃ receptor antagonist and its applications in CNS-related disorders. *CNS drug reviews*, 7(2), pp.199

LAMPIRAN

Lampiran 1. Riwayat Hidup



Penulis dengan nama lengkap Melkisedek Jeffry Dwijaya, lahir pada tanggal 10 Februari 1999 di Kota Ujung Pandang, Sulawesi Selatan, merupakan anak dari pasangan Ayahanda Jeffry Husein dan Ibunda Melly. Penulis menempuh pendidikan dari TK Pniel Palopo kemudian melanjutkan ke jenjang sekolah dasar di SDN 75 Surutanga (sekarang dikenal dengan SDN 3 Palopo), lalu ke tingkat sekolah menengah di SMP Katolik Rajawali. Penulis menyelesaikan pendidikan di SMA Dian Harapan Makassar pada tahun 2016 kemudian diterima di Program Studi Kedokteran Hewan, Fakultas Kedokteran Universitas Hasanuddin pada tahun 2017. Selama Perkuliahan penulis aktif di organisasi internal kampus yakni Himpunan Mahasiswa Kedokteran Hewan (HIMAKAHA) FK-UH dan menjabat sebagai Anggota Kerohanian HIMAKAHA selama dua periode, yakni 2019-2020 dan 2020-2021. Pada bidang akademik, penulis pernah menjabat sebagai koordinator Asisten Lab. Fisiologi Veteriner, serta sebagai anggota Asisten Lab. Ilmu bedah Umum dan Ilmu bedah khusus 1 & 2. Penulis melaksanakan tugas akhir strata profesi dokter hewan dengan judul **“Penanganan Panleukopenia pada Kucing Domestik di Rumah Sakit Hewan Pendidikan Universitas Hasanuddin”**.

Treatment of Panleukopenia in Domestic Cats at Hasanuddin University Veterinary Teaching Hospital.

Melkisedek Jeffry Dwijaya ¹

Hasanuddin University, Makassar, South Sulawesi

Email: melkisedek.jd@gmail.com

ABSTRACT. *Feline panleukopenia is a viral disease with the main agent being a virus in the Parvoviridae family which is highly contagious and can attack especially young cats which are clinically characterized by leukopenia, vomiting, depression, dehydration and diarrhea. The results of the clinical examination showed dehydration, yellow vomiting accompanied by bloody diarrhea. Supportive examination in the form of a Rapid test marked by the presence of lines on panels C and T shows positive results infected with the feline panleukopenia virus. Treatment of panleukopenia cases was carried out with supportive therapy in the form of giving Ringer lactate fluid, multivitamins combined with imboost, giving antibiotics in the form of ceftriaxone and giving anti-inflammatories in the form of tolfedine for 7 days and isolated. The cat's condition experienced a significant improvement and responded well to the treats given. The patient was discharged on the seventh day with a normal body condition.*

Keywords: Feline Panleukopenia Virus, Diarrhea, Cats, Rapid Test

I. INTRODUCTION

The level of cat ownership in Indonesia is increasing every year. Currently, people keep cats as a hobby or pet. Therefore, the public will pay attention to the health of their pets and check them at a clinic or animal hospital if their pet is attacked by a disease. *Feline panleukopenia* is a disease that can affect cats (Putri *et al.*, 2020)

Feline panleukopenia is a viral disease with the main agent being a virus in the Parvoviridae family which is highly contagious and attacks mainly young cats which can be clinically characterized by leukopenia, vomiting, depression, fatigue and diarrhea (Truyen *et al.*, 2009). The panleukopenia virus is non-enveloped and has a high degree of resistance to physical and chemical factors. Panleukopenia can survive in a polluted environment for a long time (Tilley and Smith, 2011)

Transmission of the panleukopenia virus in cats can occur via fecal-oral directly or indirectly. The presence of feces from infected cats through food, vomit, feces, bladder water, saliva, or other objects. The panleukopenia virus can enter the body and replicate in actively dividing cells such as spinal cord, lymphoid tissue, small intestinal epithelium, cerebellum and retina in neonatal cats which can cause panleukopenia, ataxia, incoordination of movements, and visual disturbances in young animals (Truyen *et al.*, 2009).

Diagnosis of FPV in cats can be done through information from the owner in the form of anamnesis, clinical signs, and supporting examinations such as virus isolation, electron microscopy, Immunochromatographic Assay (ICG), Polymerase Chain Reaction (PCR), Enzyme-linked Immunosorbent Assay (ELISA, or indirect). Immunofluorescence (Marlissa *et al.*, 2022)

Treatment must be carried out quickly in cats infected with FPV, especially in cats that are young and have not been vaccinated against the FPV virus. Young cats under 12 weeks have morbidity and mortality rates ranging from 25-90%, so they are an important concern in treating young cats infected with FPV with a low recovery rate (Dawson *et al.*, 2001).

II. MATERIALS AND METHODS

ANAMNESIS

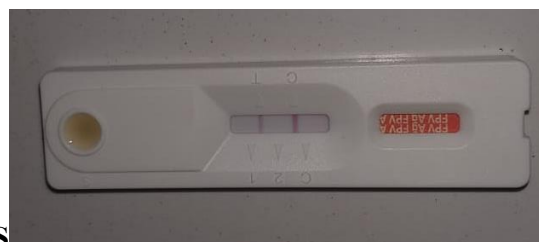
A 1-year old male domestic cat named Jeje was brought to the hospital by *his owner* on January 5 2023 with complaints of blood in the stool, yellow vomit and loss of appetite to eat and drink

PHYSICAL EXAMINATION

The weight of the cat is 4.2 kg with a temperature of 39.9°C. The clinical signs observed, namely the cat is dehydrated and the body needs further examination and further observation.

SUPPORTING EXAMINATIONS

Supporting examinations were carried out using rapid test kit, namely by taking a stool sample with cotton bud in the cat's anus, then mixing it with diluent and stirring it for about 3 minutes. After that, the diluent was dripped into the rapid test kit and waited for 15 minutes. The rapid test kit shows a positive result for FPV injury



RESULTS

Figure 1. Positive results of the patient *rapid test kit*



Figure 2. Patient



Figure 3. Patient feces mixed with blood

DIAGNOSIS

Based on the history, physical examination and clinical signs, the diagnosis was feline panleukopenia

THERAPY

The therapy given to the patient was in the form of giving the antibiotic *Ceftriaxone* at a dose of 0.42 ml 2 times a day IV. The anti-inflammatory given was *Tolfedine* at a dose of 0.1 ml IM. Fluid therapy with lactated *Ringer* administration. Anti-emetic in the form of *ondansetron* with a dose of 0.42 ml. Anti-diarrhea in the form of 1 ml of *kaolin pectin* and multivitamin in the form of *curcumin* syrup mixed with 1 ml of imboost before eating.

DISCUSSION

Based on the history and physical examination, it can be seen that there are problems with the digestive system. The presence of bloody diarrhea can indicate a disturbance in the digestive system and yellow vomiting which can be caused by a loss of appetite so that the cat experiences dyspepsia. Dyspepsia can refer to some digestive problems that can cause pain such as loss of appetite in cats which can cause stomach

acidity to increase. Clinical signs do not directly refer to FPV, therefore it is necessary to carry out further examination. In making the diagnosis, it is done by using the FPV test kit. Immunochromatography (ICG) can detect specific antigens or antibodies from FPV through antigen and antibody binding. The presence of a pink line in columns T and C indicates a positive result for FPV infection (Jayalie *et al.*, 2015) in patient.

The cat's condition when he came to the hospital, namely weakness and dehydration which was marked by skin turgor of more than two seconds. The virus replicates in the intestinal mucosa and proliferates rapidly thereby damaging the regeneration of the intestinal epithelium and causing wasting and malformation of the intestinal villi. The damage that occurs results in malabsorption and an increase in cell permeability and fluids around the intestine cannot be absorbed properly (Truyen *et al.*, 2009). Actions taken to treat dehydration are fluid therapy in the form of Ringer lactate (RL). RL solution is often used in the treatment of dehydration because it can replenish cell fluids. the concentration of RL solution resembles that of electrolytes that can be found in plasma (Albab *et al.*, 2022).

In handling FPV cases, symptomatic and supportive treatment can be given. Kaolin pectin is given to help and stop diarrhea which binds by binding to bacterial enterotoxins and protecting the intestinal mucosal lining. Diarrhea is a condition characterized by the consistency of liquid or paste-shaped stools with varying frequencies. In conditions of diarrhea, cats will experience a large amount of fluid loss which can cause dehydration. Kaolin pectin is able to change the viscosity of feces so that it has a denser appearance by adsorbing the surrounding liquid (Kahn, 2010).

A cat's body temperature that increases beyond normal limits indicates the body's response in fighting infectious agents. Giving anti-inflammatory in the form of tolfedine is done to reduce fever in cats. Tolfenamic acid is a non-steroidal anti-inflammatory which functions as an anti-inflammatory, analgesic and antipyretic. Anti-inflammatory activity due to inhibition of cyclo-oxygenase which leads to reduction of prostaglandins and thromboxane synthesis which are important inflammatory mediators (Krause and Tacke, 2010)

The use of antibiotics aims to treat secondary infection in FPV cases. Ceftriaxone is a broad-spectrum beta-lactam cephalosporin antibiotic that works by inhibiting bacterial cell wall synthesis (Albarellos *et al.*, 2007)

The presence of clinical signs in the form of vomiting can pose a risk in increasing the degree of dehydration in cats. Giving anti-emetics in the form of ondansetron is carried out as a symptomatic treatment in an effort to prevent vomiting in cats. Ondansetron is a dissociating antagonist of the serotonin receptor subtype, 5-HT₃. Serotonin can stimulate vagal and splanchnic nerve receptors which are connected to the medullary vomiting center so that inhibition of serotonin action will prevent nausea and vomiting (Ye *et al.*, 2001)

Curcuma plus and imboost are given as supplements to help restore the body's condition to cats. Curcuma plus contains multivitamins in the form of vitamin D, vitamin A and vitamin B complex. Curcuma content can affect the pancreas in increasing appetite and accelerating stomach emptying (Ulum *et al.*, 2018). Imboost contains Echinacea purpurea extract which works by helping to activate phagocytosis, stimulate fibroblasts and increase respiratory activity which results in better leukocyte mobility (Manayi *et al.*, 2015)

Patient was treated at the Hasanuddin University Veterinary Teaching Hospital for 7 days before being sent home. On the third day, the patient experienced an improvement in body condition with improved appetite, active behavior and solid stool consistency. Before being sent home on the seventh day, the condition of patient examination showed no diarrhea, vomiting and dehydration. Patient have a good response to the treatment given so that they are able to restore normal conditions to the cat.

CONCLUSION

Patient was diagnosed with panleukopenia based on the results of the examination and rapid test. After 7 days of intensive care at the Hasanuddin University Teaching Animal Hospital, the cat's condition has improved.

REFERENCE

- Albab, U., Febrianti, A., Hermawan, I.P. and Kurnianto, A., 2022. Studi kasus: Feline panleukopenia virus pada kucing abel. *VITEK: Bidang Kedokteran Hewan*, 12(2), pp.1-4.
- Albarellos, G.A., Kreil, V.E. dan Landoni, M.F., 2007. Pharmacokinetics of ceftriaxone after intravenous, intramuscular and subcutaneous administration to domestic cats. *Journal of veterinary pharmacology and therapeutics*, 30(4), pp.345-352.
- Dawson S, Willoughby K, Gaskell RM, Wood G, Chalmers WSK. 2001. A field trial to assess the effect of vaccination against feline herpesvirus, feline calicivirus and feline panleukopenia virus in 6-week-old kittens. *Journal of Feline Medicine Surgery* 3: 17-22
- Jayalie VF, Made Ngurah S, Cynthia W, Leonard N. 2015. Prinsip imunokromatografi imunoglobulin a saliva sebagai metode deteksi dini dan cepat virus dengue secara noninvasif. *Jurnal Mahasiswa Kedokteran Indonesia* 2(3): 21-28
- Kahn CM. 2010. *The Merck Veterinary Manual. 10th Ed. Inc.* New Jersey. Merck and Co. 345-351.
- Krause, M. dan Tacke, S., 2010. Clinical application of tolfenamic acid (Tolfedine®) in dogs and cats. *Kleintierpraxis*, 55(9), pp.484-489.
- Manayi, A., Vazirian, M. and Saeidnia, S., 2015. Echinacea purpurea: Pharmacology, phytochemistry and analysis methods. *Pharmacognosy reviews*, 9(17), p.63.
- Marlissa, F.C.M., Suartha, I.N. and Widayastuti, S.K., Laporan Kasus: Penanganan Panleukopenia pada Kucing Kampung Usia Muda yang Belum Pernah Divaksinasi. *IMV*. 11(4), pp.206-213.
- Putri, R., Sumiarso, B. and Mulyani, G.T., 2020. Faktor Risiko Feline Panleukopenia pada Kucing di Daerah Istimewa Yogyakarta. *Jurnal Sain Veteriner*, 38(3), pp.206-213.
- Tilley P and Smith JR. 2011. *Blackwell's Five-Minute Veterinary Consult: Canine and Feline*. 5th ed. John Wiley & Sons. Inc.
- Truyen, U., Addie, D., Belák, S., Boucraut-Baralon, C., Egberink, H., Frymus, T., Gruffydd-Jones, T., Hartmann, K., Hosie, M.J., Lloret, A. and Lutz, H., 2009. Feline panleukopenia. ABCD guidelines on prevention and management. *Journal of Feline Medicine & Surgery*, 11(7), pp.538-546.
- Ulum, M.M., Zubaidah, M. dan Arief, M., 2018, April. The influence of supplemented Curcuma in feed formulation to improve growth rate and feed efficiency of catfish (*Clarias* sp.). *IOP Conference Series: Earth and Environmental Science* 137(1): 12007.
- Ye, J.H., Ponnudurai, R. and Schaefer, R., 2001. Ondansetron: a selective 5-HT₃ receptor antagonist and its applications in CNS-related disorders. *CNS drug reviews*, 7(2), pp.199

