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MANAGEMENT OF CHRONIC DIARRHEA ASSOCIATED WITH PANCREATIC DISORDER IN A NINE-MONTH-OLD DOMESTIC CAT

Penatalaksanaan Diare Kronis akibat Gangguan Pankreas pada Kucing Lokal Berusia Sembilan Bulan

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Abstract

A nine-month-old local cat was diagnosed with chronic diarrhea accompanied by pancreatitis. This article aims to report a case of chronic diarrhea in a local cat associated with pancreatic dysfunction. The diagnosis was established based on anamnesis, clinical examination, and laboratory findings indicating impaired pancreatic function. The prognosis for this case was considered favorable. Management included administration of the probiotic Entero Secure BD® for 30 days (1 tablet/day), a low-fat diet using a specialized gastrointestinal feed, supplementation with Vitazym Plus® for seven days (½ tablet/day), and supportive therapy in the form of acupuncture performed once weekly for four weeks. After 30 days of treatment, the patient's clinical condition showed significant improvement, as evidenced by more solid feces and reduced abdominal pain. This case demonstrates an association between pancreatitis and chronic diarrhea, which may mutually exacerbate gastrointestinal dysfunction. The owner was advised to conduct regular health check-ups to monitor gastrointestinal status and minimize the risk of recurrence or potential complications.

Keywords: acupuncture; chronic diarrhea; cat; pancreatitis; probiotics

Abstrak

Seekor kucing lokal berusia sembilan bulan didiagnosis mengalami diare kronis yang disertai pankreatitis. Tujuan utama dari artikel ini adalah untuk melaporkan kasus diare kronis pada kucing lokal yang berkaitan dengan disfungsi pankreas. Diagnosis ditegakkan berdasarkan hasil anamnesis, pemeriksaan klinis, serta hasil laboratorium yang menunjukkan adanya gangguan pada fungsi pankreas. Prognosis pada kasus ini dinilai *fausta*. Penatalaksanaan dilakukan melalui pemberian probiotik Entero Secure BD® selama 30 hari (1 tablet/hari), diet rendah lemak dengan pakan khusus gastrointestinal, suplementasi Vitazym Plus® selama tujuh

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

hari (½ tablet/hari), serta terapi suportif berupa akupunktur yang diberikan selama empat minggu (1 kali/minggu). Setelah 30 hari pengobatan, kondisi klinis pasien menunjukkan perbaikan yang signifikan, ditandai dengan konsistensi feses yang mulai terbentuk dan berkurangnya nyeri pada abdomen. Kasus ini menunjukkan adanya hubungan antara pankreatitis dan diare kronis yang dapat saling memperburuk fungsi saluran pencernaan. Pemilik disarankan untuk melakukan pemeriksaan kesehatan secara rutin guna memantau kondisi gastrointestinal dan meminimalkan risiko kekambuhan atau terjadinya komplikasi.

Kata kunci: akupunktur; diare kronis; kucing; pankreatitis; probiotik

INTRODUCTION

Diarrhea is a common digestive disorder in cats and can be caused by various factors. In general, diarrhea is defined as an increase in bowel movement frequency accompanied by a change in stool consistency from soft to liquid, occurring three or more times per day (Mafazah, 2013). In kittens, this condition is frequently encountered by veterinarians and animal shelter managers (Swihart, 1997). Predisposing factors that can trigger diarrhea include an inappropriate diet, stress, poor environmental sanitation, and the consumption of stale or contaminated food, which is commonly observed in stray cats (Mósena et al., 2019). Infectious agents associated with feline diarrhea include viruses, bacteria, protozoa, and parasitic worms, such as feline parvovirus, feline enteric coronavirus, *Campylobacter* spp., *Clostridium perfringens*, *Giardia duodenalis*, and *Toxocara cati* (Pedersen and Pratt, 1991; Cook, 2008).

Based on duration, diarrhea is classified into acute and chronic forms. Chronic diarrhea is characterized by persistent or recurrent episodes lasting longer than three to four weeks. Unlike acute diarrhea, which is often self-limiting and resolves without extensive medical intervention, chronic diarrhea requires a comprehensive diagnostic approach to identify the underlying cause (Marks, 2016). In addition to primary gastrointestinal disorders, chronic diarrhea may also be a manifestation of systemic diseases, including pancreatic disorders. Pancreatitis is a condition commonly associated with gastrointestinal disturbances in cats and is characterized by pancreatic inflammation resulting from the premature activation of digestive enzymes, leading to autodigestion and tissue damage (Mikszewski et al., 2003). This condition may be acute or chronic, with severity ranging from mild to fatal (Simpson, 1993; Forman et al., 2021).

Pancreatitis in cats has a multifactorial etiology, including obesity, high-fat diets, upper gastrointestinal infections, biliary tract disorders, and the use of certain medications such as azathioprine, sulfonamides, and cisplatin (Jones et al., 2015; Wolfe et al., 2020). Diagnosis is based on a combination of clinical findings, increased serum amylase and lipase levels, and abdominal ultrasonography (Guadarrama et al., 2013; Gori et al., 2019). However, reports of chronic diarrhea associated with pancreatic disorders in cats remain limited. Therefore, this case report aims to describe the diagnostic process, treatment, and clinical outcomes of a nine-month-old local cat presenting with chronic diarrhea secondary to pancreatic disorders, based on history taking, physical examination, and supporting diagnostic findings.

RESEARCH METHODS

Signalment, Anamnesis and History

The patient was a nine-month-old male domestic cat named Lulu, weighing 2.8 kg, with a black-and-white coat. The owner reported that the cat had been experiencing diarrhea for approximately two months, which had temporarily improved but recurred about three weeks prior to the examination. The frequency of defecation was up to five times per day, with stool consistency ranging from soft to paste-like. Appetite and water intake were within normal

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

limits; however, there was progressive weight loss accompanied by lethargy and decreased activity. Vomiting was not observed, but the cat frequently licked its perianal area.

The feeding history revealed a diet consisting of commercial dry food with no recent changes. The cat was housed in a cage with seven other cats, none of which showed similar clinical signs. Vaccination history was unknown, although the cat had received routine deworming treatment.

Clinical Examination

The cat was examined at the Veterinary Internal Medicine Laboratory, Faculty of Veterinary Medicine, Udayana University. The clinical examination followed a systematic and structured approach. Prior to the main examination, present status assessment was performed, including evaluation of heart rate, pulse, capillary refill time (CRT), body condition score (BCS), respiratory rate, and rectal temperature. This was followed by a comprehensive head-to-tail examination covering the integumentary (skin and hair), respiratory, circulatory, digestive, urogenital, nervous, musculoskeletal, and lymphatic systems. Each system was evaluated using inspection, palpation, auscultation, and percussion to obtain a thorough assessment of the cat's physiological and pathological condition.

Supporting Examinations

Supporting examinations performed to confirm the diagnosis included a complete blood count (CBC) using a Licare CC-3200Vet hematology analyzer, blood biochemistry analysis using a Seamaty SMT-120VP Biochemical Analyzer, and fecal examination. Additional diagnostic procedures included a feline pancreatic lipase (fPL) test using a Mindray Vet XQpert Biochemical Analyzer, a feline panleukopenia virus (FPV) rapid test, and an ultrasonographic (USG) examination.

RESULTS AND DISCUSSIONS

Results

Based on physical examination, the patient demonstrated poor nutritional status, with a BCS of 3/9 according to Royal Canin criteria (2013). The patient's present status examination results are presented in Table 1. Rectal temperature was recorded at 38.7°C, which is within the normal physiological range for cats. The mucous membranes appeared pink, with a CRT less than 2 seconds, indicating adequate peripheral circulation and no clinical evidence of dehydration.

Clinical examination revealed mild swelling in the perianal area. Abdominal palpation did not reveal any masses or foreign bodies within the gastrointestinal tract; however, the animal exhibited mild pain upon palpation of the cranial abdomen, suggesting possible pancreatic involvement. Further examination revealed black feces with a liquid to soft consistency, mildly mucoid, and with a strong odor (Figure 1). The hair coat appeared dull, with noticeable shedding. Overall, the present status examination parameters were within normal limits. Examination of the integumentary, musculoskeletal, nervous, circulatory, urogenital, and other mucosal systems revealed no significant clinical abnormalities.

Supporting examination results showed that no parasitic agents, including worm eggs or protozoa, were detected in the feces. These findings indicate that the diarrhea was not associated with gastrointestinal parasitic infestation. The feline panleukopenia virus (FPV) antigen rapid test result was negative, although a faint band was observed in the test (T) column. The CBC analysis revealed leukocytosis, lymphocytosis, and granulocytosis, indicating a systemic inflammatory response (Table 2). Initial blood biochemistry analysis showed elevated levels of aspartate aminotransferase (AST), amylase (AMY), and triglycerides (TG) (Table 3),

Terakreditasi Nasional Sinta 4, berdasarkan Keputusan Direktur Jenderal
Pendidikan Tinggi, Riset, dan Teknologi No. 158/E/KPT/2021

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

suggesting impaired hepatopancreatic function and possible inflammation of the associated organs.

Furthermore, feline pancreatic lipase (fPL) concentration was elevated at 11.16 ng/mL (Table 4), supporting the suspicion of pancreatic inflammation. Ultrasonographic examination revealed morphological changes consistent with inflammation, including diffuse thickening, increased echogenicity of the surrounding omentum (hyperechoic appearance), and structural alterations of the pancreas, which appeared hypoechoic with irregular borders.

Diagnosis and Prognosis

Based on the history, physical examination, and supporting diagnostic findings, the cat in this case exhibited recurrent chronic diarrhea accompanied by indications of pancreatic dysfunction. However, a definitive causal relationship between pancreatitis and chronic diarrhea cannot be fully established, as histopathological confirmation through pancreatic biopsy was not performed.

The blackish coloration of the feces does not correspond to steatorrhea, which is commonly associated with pancreatitis and typically presents as pale, oily stools that are difficult to flush due to fat malabsorption. This stool appearance is more likely related to upper gastrointestinal bleeding or alterations in gut microbiota composition.

Therefore, the diagnosis was based on a combination of clinical findings and laboratory results supporting pancreatic dysfunction. The prognosis for this case was considered favorable, given that the patient's general condition remained stable with adequate appetite and water intake. Therapeutic success depends strongly on owner compliance with medication and adherence to a specialized therapeutic diet. With appropriate and continuous management, the long-term prognosis is expected to include significant improvement in the patient's quality of life.

Treatment

Therapeutic management included administration of the probiotic Entero Secure BD® for 30 days at a dose of one tablet per day, provision of a low-fat diet using a specialized gastrointestinal feed, and supplementation with Vitazym Plus® for seven days at a dose of half a tablet per day. In addition, supportive therapy was provided in the form of acupuncture at the Bai-Hui, GV-3, ST-36, GB-30, GB-34, BL-20, BL-21, LI-4, and LI-1 acupoints for 15 minutes using dry needles, performed once weekly for four weeks. During the treatment period, the cat was housed in a well-sanitized cage to support the recovery process.

Discussion

The cat in this case was diagnosed with chronic, recurrent diarrhea associated with pancreatic dysfunction, specifically pancreatitis. The diagnosis was established based on anamnesis, clinical examination, and supporting diagnostic tests. The cat was rescued from a neighborhood environment and was initially healthy, showing no clinical signs. Digestive disturbances first appeared approximately six months after adoption, resolved temporarily, and then recurred three weeks prior to presentation.

Clinically, the cat exhibited mild cranial abdominal pain on palpation, perianal swelling, and blackish, watery, mucoid feces with a strong odor. The blackish stool was consistent with melena, which generally indicates bleeding in the upper gastrointestinal tract. Although melena is not specific to pancreatitis, it may occur concurrently with irritation of the gastric or duodenal mucosa, for example due to increased digestive enzyme activity or systemic stress. Therefore, these findings are more likely indicative of a secondary gastrointestinal disorder rather than a direct manifestation of pancreatitis. Other clinical signs suggested a chronic gastrointestinal disorder with possible

Terakreditasi Nasional Sinta 4, berdasarkan Keputusan Direktur Jenderal
Pendidikan Tinggi, Riset, dan Teknologi No. 158/E/KPT/2021

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

involvement of the pancreas as a supporting organ. No signs of dehydration were observed, indicating that the systemic condition of the cat remained relatively stable.

Hematological examination revealed leukocytosis (27.8 × 10^3/µL), lymphocytosis (8.7 × 10^3/µL), and granulocytosis (62.6%), indicating an active systemic inflammatory response. Leukocytosis may reflect bacterial or viral infection or ongoing inflammation, while increased granulocyte counts, particularly neutrophils, suggest a response to acute inflammation or tissue injury. Lymphocytosis in this case likely reflects chronic immune stimulation associated with prolonged gastrointestinal inflammation (Estridge et al., 2000).

Chronic diarrhea in cats can result from various infectious agents, including viruses, bacteria, protozoa, and helminths (Mósena et al., 2019). In this case, the feline panleukopenia virus (FPV) rapid test yielded a negative result, excluding FPV infection (Cave et al., 2002; Utomo et al., 2023). Fecal examination using native, sedimentation, and flotation techniques did not detect worm eggs or protozoan cysts, thereby ruling out a parasitic cause of diarrhea (Cook, 2008; Polak et al., 2014; Gookin et al., 2004). Based on these findings, a primary gastrointestinal infectious etiology was considered unlikely, and pancreatic dysfunction with chronic inflammation was regarded as the most probable underlying cause of the chronic diarrhea.

Blood biochemistry analysis revealed elevated levels of AST (62 U/L), AMY (2402 U/L), and TG (1.97 mmol/L). Increased AST activity may indicate hepatic or muscular tissue damage, as this enzyme is not organ-specific. The ALT value (117 U/L) remained within the normal range, suggesting the absence of marked hepatocellular injury. In cats, ALT is not entirely liver-specific, as it is also present in kidney and lung tissues in relatively high concentrations (Kaneko et al., 2008; Stockham and Scott, 2024). Elevated amylase levels indicate impaired pancreatic function; however, this parameter is not specific for pancreatitis, as amylase is also produced by the salivary glands and small intestine (Simpson, 1993; Hargis, 2019). Therefore, elevated amylase levels must be interpreted in conjunction with other diagnostic findings, including results of the fPL test.

The patient's fPL concentration of 11.16 ng/mL represents a marked increase compared with the normal reference value (<3.5 ng/mL). This assay has high specificity for the diagnosis of pancreatitis in cats (Forman et al., 2004; Xenoulis et al., 2023), although it does not allow differentiation between acute and chronic forms of the disease.

A significant increase in amylase activity indicates abnormal activation of pancreatic enzymes and is consistent with pancreatitis (Hargis, 2019). The elevated triglyceride concentration (1.97 mmol/L) may reflect a lipid metabolism disturbance secondary to pancreatitis, in which inflammation of pancreatic tissue disrupts the activity of lipoprotein lipase (LPL), an enzyme responsible for plasma triglyceride hydrolysis. Impairment of LPL activity results in triglyceride accumulation in the circulation, which may further exacerbate pancreatic injury by increasing blood viscosity and inducing oxidative stress in acinar cells (Goldberg, 2001).

Following therapy, most biochemical parameters showed improvement; however, AMY levels remained elevated (2409 U/L) despite notable clinical recovery. This discrepancy may be explained by the limited specificity of amylase, as it is also produced by the salivary glands and small intestine. Additionally, the clearance of AMY from the circulation may lag behind clinical improvement. During the resolution phase of pancreatitis, persistently elevated amylase levels may result from residual enzyme release by regenerating pancreatic tissue (Simpson, 1993; Forman et al., 2021). Therefore, the post-treatment elevation of AMY in this case does not necessarily indicate ongoing active inflammation, but rather reflects a residual biochemical response commonly observed during the healing process (Forman et al., 2021).

Ultrasonographic examination revealed pancreatic thickening with irregular hypoechoic areas

Terakreditasi Nasional Sinta 4, berdasarkan Keputusan Direktur Jenderal
Pendidikan Tinggi, Riset, dan Teknologi No. 158/E/KPT/2021

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

and a surrounding hyperechoic omentum, findings that are characteristic of chronic pancreatitis with adipose tissue infiltration (Armstrong and Williams, 2012). Taken together, the elevated fPL concentration, increased amylase activity, and supportive ultrasonographic findings confirm the diagnosis of chronic pancreatitis with residual inflammatory activity.

Pancreatitis results from premature activation of digestive enzymes, leading to pancreatic tissue damage and a subsequent systemic inflammatory response. This condition can impair the secretion of digestive enzymes into the small intestine, resulting in malabsorption and chronic diarrhea. Although chronic diarrhea and pancreatic dysfunction may occur concurrently, such cases are relatively uncommon and can be associated with increased mortality in cats. Weiss et al. (1996) reported concurrent pancreatitis and intestinal inflammation in 50% and 83% of feline cases, respectively. The etiology of pancreatitis often remains unclear, as it may occur as a primary disorder or develop secondary to other conditions. Jörg and David (1999) reported that approximately 90% of feline pancreatitis cases lack an identifiable cause. Several predisposing factors have been proposed, including nutritional imbalances, toxin exposure, pancreatic ischemia, duodenal or biliary reflux, and bacterial colonization of the pancreas. Such bacterial invasion may occur via hematogenous spread, transmural migration from the intestine, or reflux through the pancreatobiliary duct (Widdison et al., 1994). Additionally, *Escherichia coli* has been suggested to migrate from the intestinal tract to the pancreas through compromised intestinal mucosa or via the pancreatobiliary system, potentially triggering pancreatic inflammation (Widdison et al., 1994).

The prognosis in this case was considered favorable based on the patient's young age and overall stable condition. Therapeutic management consisted of administration of the probiotic Entero Secure BD®, supplementation with the digestive enzyme Vitazym Plus®, implementation of a low-fat diet using a specialized gastrointestinal formulation, and supportive acupuncture therapy. Probiotics contribute to the stabilization of intestinal microbiota and attenuation of mucosal inflammation through competitive inhibition of pathogenic microorganisms and enhancement of intestinal epithelial integrity (Gu et al., 2022; Ding et al., 2021). Furthermore, probiotics have been shown to improve microbial balance and reduce proinflammatory cytokine activity in cases of chronic enteropathy.

Digestive enzyme supplementation (Vitazym Plus®) was administered to compensate for possible exocrine pancreatic insufficiency. The amylase, lipase, and protease components facilitate the hydrolysis of carbohydrates, fats, and proteins, thereby improving nutrient absorption and reducing the functional workload of the pancreas (Ianiro et al., 2016). Acupuncture was applied as a complementary therapy to support gastrointestinal function by modulating vagal nerve activity and neuroendocrine responses. Stimulation of acupoints such as Bai-Hui (GV-20), GV-1, ST-36, ST-37, GB-30, GB-34, BL-20, BL-21, LI-4, and LI-1 has been reported to enhance intestinal motility, improve pancreatic perfusion, and alleviate abdominal pain through endorphin release and modulation of autonomic nervous system pathways (Wong and Shen, 2010; Li et al., 2020). The combined use of these therapeutic approaches aims to reduce inflammation, restore digestive function, and synergistically accelerate clinical recovery.

Based on clinical findings, laboratory data, and supporting literature, it can be concluded that the recurrent chronic diarrhea observed in this cat was associated with pancreatic dysfunction and residual inflammation. Persistently elevated amylase levels after therapy do not necessarily reflect ongoing active inflammation but may represent a residual biochemical response during the recovery phase. Probiotics and acupuncture may offer beneficial supportive effects, particularly in maintaining gastrointestinal function, reducing inflammation, and promoting clinical improvement. However, scientific evidence supporting their use in feline pancreatitis

Terakreditasi Nasional Sinta 4, berdasarkan Keputusan Direktur Jenderal
Pendidikan Tinggi, Riset, dan Teknologi No. 158/E/KPT/2021

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

remains limited, highlighting the need for further studies to evaluate their long-term efficacy and safety.

Limitations of this report include the absence of pancreatic biopsy for histopathological confirmation and the involvement of a single case, necessitating a diagnosis based solely on an integrated interpretation of clinical and laboratory findings.

CONCLUSION AND SUGGESTIONS

Conclusion

The cat in this case was diagnosed with chronic diarrhea accompanied by pancreatic dysfunction and had a favorable prognosis. Treatment consisted of administration of the probiotic Entero Secure BD®, a low-fat diet using a specialized gastrointestinal feed, supplementation with Vitazym Plus®, and acupuncture therapy. After 30 days of treatment, the cat's clinical condition showed significant improvement, as evidenced by improved stool consistency and reduced abdominal pain. This case illustrates an association between pancreatic dysfunction and chronic diarrhea, which may exacerbate gastrointestinal disturbances. However, this report has limitations, as pancreatic histopathological examination was not performed and the case involved only a single individual. Therefore, the diagnosis was based on an integrated interpretation of clinical findings and laboratory results.

Suggestions

Owner education is essential to emphasize the importance of early diagnosis and treatment in preventing disease progression and worsening of clinical signs. Regular health check-ups are recommended to monitor gastrointestinal function and minimize the risk of recurrence or complications. Furthermore, future studies involving a larger number of cases and pancreatic histopathological confirmation are needed to strengthen the evidence supporting the relationship between pancreatitis and chronic diarrhea in cats.

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REFERENCES

Armstrong, P. J., & Williams, D. A. (2012). Pancreatitis in Cats. *Topics in Companion Animal Medicine*, *27*(3), 140–147. https://doi.org/10.1053/j.tcam.2012.09.001

Berman, B. M., Birch, S., Cassidy, C. M., Cho, Z. H., Ezzo, J., Hammerschlag, R., & Takeshige, C. (2011). *Clinical acupuncture: scientific basis* (G. Stux & R. Hammerschlag, Eds.). Springer.

Cave, N., Delaney, S. J., & Larsen, J. A. (2023). Nutritional Management of Gastrointestinal Diseases. In *Applied Veterinary Clinical Nutrition* (pp. 235–298). Wiley. https://doi.org/10.1002/9781119375241.ch11

Cave, T. A., Thompson, H., Reid, S. W. J., Hodgson, D. R., & Addie, D. D. (2002). Kitten mortality in the United Kingdom: a retrospective analysis of 274 histopathological examinations (1986 to 2000). *Veterinary Record*, *151*(17), 497–501. https://doi.org/10.1136/vr.151.17.497

Cook, A. K. (2008). Feline Infectious Diarrhea. *Topics in Companion Animal Medicine*, *23*(4), 169–176. https://doi.org/10.1053/j.tcam.2008.07.001

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

Ding, S., Yan, W., Ma, Y., & Fang, J. (2021). The impact of probiotics on gut health via alternation of immune status of monogastric animals. *Animal Nutrition*, *7*(1), 24–30. https://doi.org/10.1016/j.aninu.2020.11.004

Estridge, B, H, Reynolds, A. P, & Walters, N. J. (2000). *Basic medical laboratory techniques*. Cengage Learning.

Forman, M. A., Marks, S. L., de Cock, H. E. V., Hergesell, E. J., Wisner, E. R., Baker, T. W., Kass, P. H., Steiner, J. M., & Williams, D. A. (2004). Evaluation of Serum Feline Pancreatic Lipase Immunoreactivity and Helical Computed Tomography versus Conventional Testing for the Diagnosis of Feline Pancreatitis. *Journal of Veterinary Internal Medicine*, *18*(6), 807–815. https://doi.org/10.1111/j.1939-1676.2004.tb02626.x

Forman, M. A., Steiner, J. M., Armstrong, P. J., Camus, M. S., Gaschen, L., Hill, S. L., Mansfield, C. S., & Steiger, K. (2021). ACVIM consensus statement on pancreatitis in cats. *Journal of Veterinary Internal Medicine*, *35*(2), 703–723. https://doi.org/10.1111/jvim.16053

Goldberg, I. J. (2001). Diabetic Dyslipidemia: Causes and Consequences. *The Journal of Clinical Endocrinology & Metabolism*, *86*(3), 965–971. https://doi.org/10.1210/jcem.86.3.7304

Gookin, J. L., Stebbins, M. E., Hunt, E., Burlone, K., Fulton, M., Hochel, R., Talaat, M., Poore, M., & Levy, M. G. (2004). Prevalence of and Risk Factors for Feline *Tritrichomonas foetus* and *Giardia* Infection. *Journal of Clinical Microbiology*, *42*(6), 2707–2710. https://doi.org/10.1128/JCM.42.6.2707-2710.2004

Gori, E., Lippi, I., Guidi, G., Perondi, F., Pierini, A., & Marchetti, V. (2019). Acute pancreatitis and acute kidney injury in dogs. *The Veterinary Journal*, *245*, 77–81. https://doi.org/10.1016/j.tvjl.2019.01.002

Gu, Q., Yin, Y., Yan, X., Liu, X., Liu, F., & McClements, D. J. (2022). Encapsulation of multiple probiotics, synbiotics, or nutrabiotics for improved health effects: A review. *Advances in Colloid and Interface Science*, *309*, 102781. https://doi.org/10.1016/j.cis.2022.102781

Guadarrama-Olhovich, M, Garcia, O, L, E, Ruiz, R, J, A, Lopez, B. C., Ramirez, L. J., & Bouda, J. (2013). Acute pancreatitis, azotaemia, cholestasis and haemolytic anaemia in a dog: a case report. *Veterinarni Medicina*, *58*(1), 44–49.

Hargis, A. M. 2019. Interpretation of hematologic and biochemical laboratory tests in veterinary patients. Veterinary Clinics of North America: *Small Animal Practice*, *49*(5), 971–1000

Ianiro, G., Pecere, S., Giorgio, V., Gasbarrini, A., & Cammarota, G. (2016). *Digestive Enzyme Supplementation in Gastrointestinal Diseases* (Vol. 17). Bentham Science Publishers.

Jones, M. R., Hall, O. M., Kaye, A. M., & Kaye, A., D. (2015). Drug-Induced Acute Pancreatitis: A Review. *Ochsner Journal*, *15*(1), 45–51.

Jôrg, M. S., & David, A. W. (1999). Feline Exocrine Pancreatic Disorders. *Veterinary Clinics of North America: Small Animal Practice*, *29*(2), 551–575. https://doi.org/10.1016/S0195-5616(99)50034-X

Kaneko, J. J., Harvey, J. W., & Bruss, M. L. (2008). *Clinical Biochemistry of Domestic Animals* (6th ed.). Academic press.

Kerr, M. G. (2008). *Veterinary laboratory medicine: Clinical biochemistry and haematology*. John Wiley & Sons.

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

Mafazah, L. (2013). Ketersediaan sarana sanitasi dasar, personal hygiene ibu dan kejadian diare. *Jurnal Kesehatan Masyarakat*, *8*(2).

Marks, S. L. (2016). Rational Approach to Diagnosing and Managing Infectious Causes of Diarrhea in Kittens. In *August's Consultations in Feline Internal Medicine, Volume 7* (pp. 1–22). Elsevier. https://doi.org/10.1016/B978-0-323-22652-3.00001-3

Mikszewski, J. S., Saunders, H. M., & Hess, R. S. (2003). Zinc-associated acute pancreatitis in a dog. *Journal of Small Animal Practice*, *44*(4), 177–180. https://doi.org/10.1111/j.1748-5827.2003.tb00141.x

Mósena, A. C. S., Cruz, D. L., Canal, C. W., Marques, S. M. T., Valle, S. F., Soares, J. F., Mattos, M. J. T., & Costa, F. V. A. (2019). Detection of enteric agents into a cats' shelter with cases of chronic diarrhea in Southern Brazil. *Pesquisa Veterinária Brasileira*, *39*(8), 630–634. https://doi.org/10.1590/1678-5150-pvb-5987

Pedersen, N. C., & Pratt, P. W. (1991). *Feline husbandry: diseases and management in the multiple-cat environment*. Goleta, CA: American Veterinary Publications.

Polak, K. C., Levy, J. K., Crawford, P. C., Leutenegger, C. M., & Moriello, K. A. (2014). Infectious diseases in large-scale cat hoarding investigations. *The Veterinary Journal*, *201*(2), 189–195. https://doi.org/10.1016/j.tvjl.2014.05.020

Simpson, K. W. (1993). *Current concepts of the pathogenesis and pathophysiology of acute pancreatitis in the dog and cat*. *15*(2), 247–253.

Soesatyoratih, R., Soehartono, R. H., & Asyraf, M. Z. (2023). Akupuntur untuk terapi konstipasi pada kucing Persia. *ARSHI Veterinary Letters*, 7(1), 3–4. https://doi.org/10.29244/avl.7.1.3-4

Stockham, S. L., & Scott, M. A. (2024). *Fundamentals of veterinary clinical pathology* (3rd ed.). John Wiley & Sons.

Swihart, E. V. (1997). Chronic diarrhea in kittens: ending the never ending story. *In Vet Forum June*, 52–61.

Thrall, M. A., Weiser, G., Allison, R. W., & Campbell, T. W. (2022). *Veterinary hematology, clinical chemistry, and cytology*. John Wiley & Sons.

Utomo, K. C., Cahyadi Putra, I. P., Soma, I. G., & Suartha, I. N. (2023). Reccurent Chronic Diarrhea on Local Female 4-Month-Old Cat. *Veterinary Science and Medicine Journal*, 1–11. https://doi.org/10.24843/vsmj.2023.v5.i08.p01

Weiss, D. J., Gagne, J. M., & Armstrong, P. J. (1996). Relationship between inflammatory hepatic disease and inflammatory bowel disease, pancreatitis, and nephritis in cats. *Journal of the American Veterinary Medical Association*, *209*(6), 1114–1116.

Widdison, A. L., Alvarez, C., Chang, Y.-B., Karanjia, N. D., & Reber, H. A. (1994). Sources of Pancreatic Pathogens in Acute Pancreatitis in Cats. *Pancreas*, *9*(4), 536–541. https://doi.org/10.1097/00006676-199407000-00019

Wolfe, D., Kanji, S., Yazdi, F., Barbeau, P., Rice, D., Beck, A., Butler, C., Esmaeilisaraji, L., Skidmore, B., Moher, D., & Hutton, B. (2020). Drug induced pancreatitis: A systematic review of case reports to determine potential drug associations. *PLOS ONE*, *15*(4), e0231883. https://doi.org/10.1371/journal.pone.0231883

Wolfe, D., Kanji, S., Yazdi, F., Barbeau, P., Rice, D., Beck, A., Butler, C., Esmaeilisaraji, L., Skidmore, B., Moher, D., & Hutton, B. (2020). Drug induced pancreatitis: A systematic review

Volume 17 No. 6: 1932-1942
December 2025
https://doi.org/10.24843/bulvet.2025.v17.i06.p16

of case reports to determine potential drug associations. *PLOS ONE*, 15(4), e0231883. https://doi.org/10.1371/journal.pone.0231883

Wong, M.-C., & Shen, H. J. (n.d.). Science-based Mechanisms to Explain the Action of Acupuncture. *Journal of the Association of Traditional Chinese Medicine (UK)*, *17*(2010).

Xenoulis, P. G., Moraiti, K. T., Spanou, V. M., Chatzis, M. K., Kokkinaki, K. C., Saridomichelakis, M. N., & Steiner, J. M. (2023). Specificity of a pancreatic lipase point-of-care test and agreement with pancreatic lipase immunoreactivity in cats without clinical evidence of pancreatitis. *Journal of Feline Medicine and Surgery*, *25*(7). https://doi.org/10.1177/1098612X231183299

Tables

Table 1. Physical examination findings (present status) of the patient

Present status	Result	Normal Range*	Interpretation
Heart rate (beats/min)	126	110-130	Normal
Pulse rate (beats/min)	120	110-130	Normal
Capillary refill time/CRT (s)	< 2	< 2	Normal
Respiration rate (breaths/min)	30	24-42	Normal
Rectal temperature (°C)	38.9	38.1-39.2	Normal

*Reference: Tilley dan Smith Jr (2015)

Table 2. Complete Blood Count (CBC) examination results

Parameter	Result	Unit	Interpretation	Reference range
WBC	27.8	10^3/µL	Increased	5.5-19.5
Lymphocytes	8.7	10^3/µL	Increased	0.8- 7
Granulocytes	62.6	10^3/µL	Increased	2.1-15
RBC	7.10	10^6/µL	Normal	4.6-10
Hemoglobin	12.1	g/dL	Normal	9.3-15.3
HCT	33.2	%	Normal	28-49
MCV	46.9	fL	Normal	39-52
MCH	17.0	pg	Normal	13-21
MCHC	36.4	g/dL	Normal	30-38
RDW-CV	17.5	%	Normal	14-18
RDW-SD	25.8	fl	Normal	20-80
Platelet	135	10^3/µL	Normal	100-514
MPV	9.2	%	Normal	5-11.8
PDW	10.8		Normal	5-20
PCT	0.124	%	Normal	0.1-0.5
Eosinophils%	2.7	%	Normal	

Abbreviations: WBC: White Blood Cell; RBC: Red Blood Cell; HCT: Hematocrit; MCV: Mean Corpuscular Volume; MCH: Mean Corpuscular Hemoglobin; MCHC: Mean Corpuscular Hemoglobin Concentration; RDW-CV: Red Cell Distribution Width Coefficient of Variation; RDW-SD: Red Cell Distribution Width Standard Deviation; MPV: Mean Platelet Volume; PDW: Platelet Distribution Width; PCT: Procalcitonin. The reference range is based on hematology analyzer.

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Volume 17 No. 6: 1932-1942
December 2025
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Tabel 3. Comparison of blood biochemical parameters before and after therapy

Parameter	Result				Unit	Reference
	Pre-therapy	Interpretation	Post-therapy	Interpretation		
ALB	31.7	Normal	28.2	Normal	g/L	22.0-44.0
IP	81.3	Normal	69.6	Normal	g/L	57.0-89.0
GLOB	49.6	Normal	41.5	Normal	g/L	23.0-52.0
A/G	0.64		0.68			
TB	0.8	Normal	1.9	Normal	umol/L	0.0-15.0
AST	62	Increased	24	Normal	U/L	0-48
ALT	117	Normal	81	Normal	U/L	5-130
AMY	2402	Increased	2409	Increased	U/L	500-1500
CK	197	Normal	120	Normal	U/L	0-559
Crea	77.9	Normal	97.0	Normal	umol/L	44-212
BUN	6.62	Normal	5.99	Normal	mmol/L	4-12.90
BUN/CREA	84.914		61.763			27-182
GLU	5.57	Normal	5.01	Normal	mmol/L	4.11-8.83
TG	1.97	Increased	0.50	Normal	mmol/L	0–1.13
Ca	2.35	Normal	2.24	Normal	mmol/L	1.95-2.83
PHOS	2.25	Normal	2.43	Increased	mmol/L	1-2.42

Abbreviations : ALB: Albumin; IP: Inorganic Phosphate; GLOB: Globulin; A/G: Albumin/Globulin Ratio; TB: Total Bilirubin; AST: Aspartate Aminotransferase; ALT: Alanine Aminotransferase; AMY: Amylase; CK: Creatine Kinase; Crea: Creatinine; BUN: Blood Urea Nitrogen; BUN/CREA: BUN/Creatinine ratio; GLU: Glucose; TG: Triglyceride; Ca: Calcium; PHOS: Phosphor. The reference range is based on biochemical analyzer.

Table 4. Feline Pancreatic Lipase (fPL) test results

Parameter	Result	Interpretation	Unit
fPL	11.16	Abnormal	ng/mL

Note: The value of <3.50 ng/mL is considered normal, 3.50-5.40 ng/mL is suspected, and >5.40 ng/mL is abnormal.

Figure

Figure 1. Gross appearance of blackish feces showing a soft to liquid consistency and oily surface.

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