BASIC AND APPLIED NURSING RESEARCH JOURNAL
2025, Vol. 6, No. 2, 66 – 72
http://dx.doi.org/10.11594/banrj.06.02.03

Case Study

Diagnosis of Ancylostomiasis in a Cat

Ario Ridho Gelagar[1]*, Dian Aulia Tri Yuska[1], Juliadi Ramadhan[2], Anna Zukiaturrahmah[2], Usma Aulia[2], Yofa Sukmawati[3]

[1]Program Studi Paramedik Veteriner Jurusan Peternakan dan Kesehatan Hewan Politeknik Pertanian Negeri Payakumbuh, Lima Puluh Kota, Indonesia
[2]Program Studi Pendidikan Kedokteran Hewan, Fakultas Kesehatan Universitas Muhammadiyah Sumatera Barat, Bukittinggi, Indonesia
[3]Program Studi Kebidanan, Fakultas Kesehatan Universitas Muhammadiyah Sumatera Barat, Bukittinggi, Indonesia

Article history:
Submission 9 October 2025
Revised 25 November 2025
Accepted 25 December 2025

**Corresponding author:*
E-mail:
arioridhogelagar@gmail.com

ABSTRACT

Ancylostomiasis is an important gastrointestinal helminthiasis in cats with zoonotic potential. This case report describes ancylostomiasis in a seven-year-old domestic female cat presented to Yours Animal Clinic, Padang Panjang, West Sumatra, with diarrhea and lethargy. Clinical examination, fecal analysis, and hematological evaluation were performed to establish the diagnosis. Fecal examination using native smear, flotation, centrifugation, and McMaster counting techniques revealed Ancylostoma sp. eggs with an eggs-per-gram (EPG) value of 2,200, indicating a mild infection intensity. Physical examination showed a low body condition score, dull hair coat, mild dehydration, and diarrhea. Hematological analysis demonstrated decreased red blood cell count, hemoglobin, hematocrit, granulocytes, and platelets, accompanied by increased lymphocytes, monocytes, mean corpuscular hemoglobin (MCH), and mean corpuscular hemoglobin concentration (MCHC), consistent with anemia and an inflammatory response secondary to helminth infection. Based on these findings, the cat was diagnosed with ancylostomiasis and treated with anthelmintics, fluid therapy, antibiotics, and supportive care. This case highlights the integration of clinical, parasitological, and hematological findings in the diagnosis of ancylostomiasis in cats and underscores the importance of routine deworming, appropriate husbandry, environmental sanitation, and periodic fecal examination to reduce the risk of infection and potential zoonotic transmission.

Keywords: *ancylostomiasis, Ancylostoma spp., cat, gastrointestinal helminths, fecal examination, hematology, zoonosis*

How to cite:

Gelagar, A.R., Yuska, D.A.T., Ramadhan, J., Zukiaturrahmah, J., Aulia, U., & Sukmawati, Y. (2025). Diagnosis of Ancylostomiasis in a Cat. *Basic and Applied Nursing Research Journal*, *6*(2), 66– 72. doi: 10.11594/banrj.06.02.03

Background

Cats are among the most commonly kept companion animals. Owners generally pay considerable attention to the health status of their cats. However, increased awareness of feline health is often not accompanied by adequate knowledge of proper husbandry and management, leading to a high incidence of disease. One of the most common problems in cats is gastrointestinal tract disorders [1]. Gastrointestinal disturbances are among the most frequently encountered clinical problems in companion animals [2]. These conditions are closely related to husbandry practices, particularly the quality and pattern of feeding, as these factors can modulate gastrointestinal conditions, predispose to parasitic infections or infestations, and increase the risk of metabolic disorders associated with the nutritional status of the animal [3].

In addition, poor health management, such as irregular deworming schedules, also contributes to disease occurrence. Several types of helminth infections found in the feline gastrointestinal tract include Toxocara sp., Strongyloides sp., and Ancylostoma sp. [4]. Ancylostoma sp. is a blood-feeding intestinal nematode. Infestation with Ancylostoma sp. can cause a disease known as ancylostomiasis. Intestinal infections are often subclinical or mild in adult cats, but severe disease may occur in kittens with a high worm burden [5]. Surveys show the highest prevalence of gastrointestinal parasites in kittens (< 1 year of age) and confirm that younger age is associated with higher prevalence and intensity of infection.

Species of Ancylostoma that commonly infect cats include Ancylostoma tubaeforme and Ancylostoma braziliense; occasionally, cats may also be infected by Ancylostoma caninum. The predilection site of these worms is the mucosa of the small intestine. Ancylostoma spp. typically reside and act on the small intestinal mucosa, where adult worms attach, feed, and interact with the intestinal epithelium, causing local damage and gastrointestinal signs [6].

Ancylostomiasis is an important zoonotic disease; several Ancylostoma species in animals are capable of infecting humans. The global burden of this disease is considerable, with recent studies and reviews estimating hundreds of millions of hookworm cases worldwide, although the exact figures vary between studies and regions [7]. Therefore, understanding this disease is crucial to prevent transmission to pet cats and their owners.

Methods

Signalment and anamnesis

The patient was a domestic female cat named Katong, white-grey in color, seven years old. The cat was examined on 7 October 2025 at Yours Animal Clinic, Padang Panjang, West Sumatra. The owner reported complaints of diarrhea and lethargy.

Fecal examination

Fecal examination in this case included native smear, flotation, and centrifugation methods, performed at Yours Animal Clinic, Padang Panjang, West Sumatra.

Native smear method

The native smear method aimed to determine the presence or absence of eggs in the feces. Fresh feces were collected after defecation and placed in a clear plastic bag, then labeled. A small amount of feces was placed on a glass slide, one drop of water was added, and the sample was mixed until homogeneous. The preparation was covered with a cover glass and examined under a microscope at 10× and 40× magnification [8]

Flotation method

The flotation method was used to determine the presence or absence of nematode eggs in the cat's feces. Approximately 2 g of feces were mixed with 58 mL of a flotation solution (saturated NaCl). The sample was homogenized and filtered, then homogenized again. The homogeneous suspension was transferred into a test tube. The tube was filled with the flotation solution until a convex meniscus formed and allowed to stand for 5 minutes to allow nematode eggs to float to the surface. A glass slide was then gently placed on the surface of the meniscus, quickly inverted, covered with a cover glass, and examined under a microscope at 10× magnification.

Centrifugation method

For the centrifugation method, 2 g of feces were placed in a mortar and mixed with solution. The suspension was poured into a centrifuge tube until three-quarters full, then centrifuged for 5 minutes. The supernatant was discarded, leaving the sediment. Saturated NaCl solution was added again to three-quarters of the tube volume and homogenized. The tube was centrifuged for another 5 minutes, then placed on a rack. Saturated NaCl solution was added dropwise with a Pasteur pipette until a convex meniscus formed and left to stand for 3 minutes. A glass slide was placed on the meniscus, quickly inverted, covered with a cover glass, and observed under a microscope at 10× magnification.

Eggs-per-gram (EPG) count

The number of eggs per gram of feces was determined in this patient. For the EPG calculation, 2 g of feces were mixed with 58 mL of flotation solution (sugar sheather solution). The feces and flotation solution were homogenized, filtered, and homogenized again. The homogeneous filtrate was then loaded into a McMaster counting chamber using a Pasteur pipette. The chamber was examined under a microscope at 10× magnification. The eggs-per-gram (EPG) was calculated using the following formula:

$$EPG = n \times 200$$

where n is the number of eggs counted and 200 is the factor derived from sample volume and chamber surface area.

Supporting examination

Supporting examination included hematology using an automatic hematology analyzer. Blood (1 mL) was collected from the cephalic vein into an EDTA vacuum tube for analysis.

Results and Discussion

Physical examination

The cat weighed 4 kg with a body condition score (BCS) of 2 out of 9. The cat was calm in response to its surroundings. Respiratory rate was 42 breaths/min, heart rate was 101 beats/min, and body temperature was 38.4°C, which is within the normal range.

On physical examination by inspection, the cat appeared lethargic with hair loss, a dull coat, poor skin condition, mild dehydration, and diarrhea. The skin condition was categorized as poor, as the skin turgor test showed that the skin did not immediately return to its original position after being gently tented. Based on the physical examination, the cat was suspected of having helminthiasis. Helminth infections affect health, growth, reproduction, nutrient absorption, and overall welfare in cats [9].

Laboratory examination confirmed ancylostomiasis, as Ancylostoma sp. eggs were observed in the fecal sample. Ancylostoma sp. is a parasitic worm that affects the digestive system of cats [10]. Cats can become infected through skin penetration, ingestion of larvae, or ingestion of rodents that serve as paratenic hosts for Ancylostoma sp. [11]. Severe Ancylostoma sp. infection can impair growth and cause anemia and hair loss.

Fecal examination

Fecal examination revealed the presence of helminth eggs. The eggs were oval, thick-shelled, and contained several morula cells. [12] described Ancylostoma sp. eggs as oval in shape. [13] reported that Ancylostoma sp. eggs are of the strongyle type, oval, with a smooth, thick shell, containing an embryo at the morula stage. The eggs usually contain 2 to 8 morula cells that will develop into larvae.

Figure 1. Egg of *Ancylostoma* sp. at 400x magnification.

The severity of Ancylostoma sp. infection can be estimated based on the number of eggs per gram of feces. An infection is categorized as mild if ≤ 5,000 eggs per gram of feces are found, moderate if 5,000–25,000 eggs per gram are found, and severe if ≥ 25,000 eggs per gram of feces are found [14]. In this case, the cat had 2,200 eggs per gram of feces, thus classified as having a mild ancylostomiasis.

Prolonged infection with Ancylostoma sp. in cats can lead to anemia and weakness. Clinically, infected cats may show pale mucous membranes, anemia, hair loss and dull coat, stunted growth, and may even die [15]. Clinical signs of ancylostomiasis vary depending on age, nutritional status, parasite burden, and host immunity. Affected cats may experience anorexia, severe dehydration, diarrhea sometimes accompanied by bleeding, vomiting, and enteritis.

Hematology examination

The hematological results for this case showed increases in lymphocytes, monocytes, MCH, and MCHC, while granulocytes, red blood cells (RBC), hemoglobin, hematocrit, and platelets were decreased.

Table 1. Hematology examination results.

Hematology	Results	Normal
White Blood Cells	15,2 x 10^3/ µL	5,5 – 19,5 x 10^3/µL
Lymphosit	11,9 x 10^3/ µL (H)	1,5 – 7,0 x 10^3/µL
Monosit	1,1 x 10^3/ µL (H)	0-0,85 x 10^3/µL
Granulosit	1,9 X 10^3 / µL (L)	2,1 – 15.0 x 10^3/ µL
Red Blood cell	4,39 x 10^6/ µL (L)	5.0 – 10,0 10^6/ µL
Hemoglobin	7,3 g/dl (L)	8.0 – 15.0 g/dl
Hematokrit	26,6 % (L)	30.0 – 45.0 %
MCV	49,5 fl	39.0 – 55.0 fl
MCH	22,9 pg (H)	13,0-17,0 pg
MCHC	46,3 g/dl (H)	30.0 – 36,0 g/dl
PLT	151 x 10^5/l (L)	200-500 x 10^5/l

*Description: WBC = white blood cell, RBC = red blood cell, MCV = mean corpuscular volume, PLT = platelet, and MCHC = mean corpuscular hemoglobin concentration. L = low, H = high. Normal hematological values in cats (Bauer, 2010).

Decreased erythrocyte and hemoglobin values indicate anemia. Anemia is a condition in which the hemoglobin concentration per unit volume of blood is reduced, resulting in decreased oxygen-carrying capacity. Cats infected with Ancylostoma typically develop microcytic hypochromic anemia due to blood loss caused by the blood-sucking activity of Ancylostoma spp. According to [16], anemia occurs because Ancylostoma sp. feeds on blood in the intestine, and some worms may migrate to the lungs and trachea, causing vomiting. Clinical evidence of anemia includes pale oral, anal, and conjunctival mucous membranes [10]. Anemia is not a disease itself but a manifestation of an underlying disease process [17].

Leukocytosis (elevated total leukocyte count) was observed in this case. Leukocytes are blood components that play a key role in the body's defense mechanisms by phagocytosing foreign material and producing and distributing antibodies in response to invading pathogens. [14] stated that leukocytosis may indicate infection, inflammation, tissue necrosis, or leukemic neoplasia. Leukocytes include basophils, eosinophils, neutrophils, lymphocytes, and monocytes [18]. Monocytes act as active phagocytes and are mobilized as part of the inflammatory response, forming a line of defense following neutrophils. Granulocytes also play a role in inflammation; their increased levels are associated with inflammatory processes [19].

Management and treatment

Management of ancylostomiasis in cats includes:

1. Fluid therapy to replace or rebalance fluid losses due to hemorrhagic diarrhea caused by hemorrhagic enteritis and mucosal damage from worm attachment.
2. Antibiotic therapy to control secondary bacterial infections resulting from intestinal lesions.
3. Symptomatic therapy to control diarrhea, including drugs that reduce increased intestinal peristalsis.
4. Anthelmintic therapy to eliminate adult worms and larval stages.
5. Supportive therapy as needed, such as nutritional support and vitamins.

Preventive measures for this cat include regular deworming every 3–4 months. Anthelmintic therapy in cats can be carried out using fenbendazole [20]. To prevent transmammary transmission, infected queens can be treated with fenbendazole at 50 mg/kg daily from day 40 of gestation until day 14 of lactation. Fenbendazole is a benzimidazole carbamate derivative with anthelmintic activity widely used in animals and, in certain indications, in humans [10]. Its mechanism of action primarily involves inhibition of microtubule polymerization and disruption of glucose uptake, leading to depletion of glycogen stores and reduced ATP production in adult worms [21].

In cats infected with Ancylostoma sp., ivermectin can also be used as an anthelmintic [22]. Ivermectin at 0.04 mg/kg can be administered 4–9 days before parturition, followed by a second treatment 10 days later. [15] reported that ivermectin can be administered by injection as an antiparasitic every 14 days. Ivermectin acts as a positive allosteric modulator of glutamate-gated chloride channels (GluCl) in invertebrate neurons and muscle cells; activation of these channels increases chloride influx, causing hyperpolarization, which blocks peripheral nerve transmission and smooth muscle contraction, resulting in paralysis of nematodes (larval and adult) and arthropods. Ivermectin can also modulate GABAergic receptors in some organisms, further enhancing inhibitory effects on the parasite nervous system [23].

In addition to deworming, preventive measures include proper hygiene in cat husbandry and living environments. Good sanitation, such as regular removal and cleaning of feces, is essential, as feces that are not promptly cleaned can serve as a source of reinfection. Periodic laboratory fecal examinations are recommended to detect infection early. Adequate and balanced nutrition, both in terms of quality and quantity, also helps maintain animal health and reduce the risk of intestinal parasitism. [24] recommend routine deworming, environmental hygiene, and regular health monitoring of pets to reduce the prevalence of parasitic infestations.

Conclusion

Based on the series of diagnostic procedures performed, the cat named Katong was confirmed to be infected with ancylostomiasis caused by Ancylostoma sp. inhabiting the gastrointestinal tract. The diagnosis was supported by clinical findings, fecal examination, and hematological profiles consistent with helminth infection and anemia.

References

1. Irawan, F., Tiuria, R., & Akbari, R. A. (2023). Studi tingkat kejadian infeksi protozoa gastrointestinal pada pasien kucing di Klinik Rvet Bogor tahun 2021. Acta Veterinaria Indonesiana, 11(2), 131–138.
2. Celi, P., Cowieson, A. J., Fru-nji, F., Steinert, R. E., Kluenter, A., & Verlhac, V. (2017). Gastrointestinal functionality in animal nutrition and health: New opportunities for sustainable animal production. Animal Feed Science and Technology, 234, 88–100. https://doi.org/10.1016/j.anifeedsci.2017.09.012
3. Wernimont, S. M., Radosevich, J., Jackson, M. I., Ephraim, E., Badri, D. V., Macleay, J. M., Jewell, D. E., Suchodolski, J. S., Waite, D. W., & Petri, R. M. (2020). The effects of nutrition on the gastrointestinal microbiome of cats and dogs: Impact on health and disease. Frontiers in Microbiology, 11, 1266. https://doi.org/10.3389/fmicb.2020.01266
4. Sawitri, D. H., Wardhana, A. H., Nefho, F., & Purwanto, E. S. (2024). Prevalence and risk factors associated with zoonotic gastrointestinal helminths transmitted by cats in Jabodetabek, Indonesia. Open Veterinary Journal, 14(10), 2551–2563. https://doi.org/10.5455/OVJ.2024.v14.i10.5
5. Waal, T. de, Sandra, A., Lawlor, A., Goddu, T., Jones, M., & Szlosek, D. (2023). Retrospective survey of dog and cat endoparasites in Ireland: Antigen detection. Animals, 13(137), 1–11.
6. Bonilla-Aldana, J. L., Espinosa-Nuñez, A. C., Bonilla-Aldana, D. K., & Rodriguez-Morales, A. J. (2024). Toxocara cati infection in cats (Felis catus): A systematic review and meta-analysis. Animals, 14(7), 1–37. https://doi.org/10.3390/ani14071022
7. Stracke, K., Jex, A. R., & Traub, R. J. (2020). Zoonotic ancylostomiasis: An update of a continually neglected zoonosis. American Journal of Tropical Medicine and Hygiene, 103(1), 64–68. https://doi.org/10.4269/ajtmh.20-0060
8. Suroiyah, F. A., Hastutiek, P., Yudhana, A., Sunarso, A., Purnama, M. T. E., & Praja, R. N. (2018). Prevalensi infeksi Toxocara cati pada kucing peliharaan di Kecamatan

Banyuwangi. Jurnal Medik Veteriner, 1(3), 99–104. https://doi.org/10.20473/jmv.vol1.iss3.2018.99-104
9. Yusuf, M. B., Tiuria, R., & Dewantoro, G. I. (2024). Study of animal owners' knowledge of helminthiasis in cats at Mayda Animal Care and iVet Clinic Dramaga, Bogor. Jurnal Medik Veteriner, 7(2), 355–361. https://doi.org/10.20473/jmv.vol7.iss2.2024.355-361
10. Nurmayani, R., Jayanti, P. D., Made, I. G., Erawan, K., & Sudirman, J. P. B. (2023). Helminthiasis in a domestic male cat. Veterinary Science and Medicine Journal, 5(10), 262–270.
11. Lima, J. C. M. P., & Del Piero, F. (2021). Severe concomitant Physaloptera sp., Dirofilaria immitis, Toxocara cati, Dipylidium caninum, Ancylostoma sp. and Taenia taeniaeformis infection in a cat. Pathogens, 10(2), 1–6. https://doi.org/10.3390/pathogens10020109
12. Fagundes-Moreira, R., Bezerra-Santos, M. A., Alves, M. H., Palazzo, N., Lia, R. P., Mendoza-Roldan, J. A., Šlapeta, J., & Otranto, D. (2025). Ancylostoma caninum and Uncinaria stenocephala hookworms: Morphological and molecular differentiation and epidemiological data in Southern Italy. Veterinary Parasitology, 339, 110581. https://doi.org/10.1016/j.vetpar.2025.110581
13. Syafindri, S., Kholik, K., Tirtasari, K., & Janah, M. (2023). The relationship between gastrointestinal worms prevalence and age of Cidomo drilling horse in Mataram City. Jurnal Biosains Pascasarjana, 24(1SP), 30–38. https://doi.org/10.20473/jbp.v24i1sp.2022.30-38
14. Nugraha, I. W. S. H., Putriningsih, P. A. S., & Batan, I. W. (2022). Laporan kasus: Ankilostomiosis pada kucing lokal mix Persia. Buletin Veteriner Udayana, 14(2), 90. https://doi.org/10.24843/bulvet.2022.v14.i02.p04
15. Riza, D. A., Widyastuti, S. K., Jayanti, P. D., & Sudirman, J. P. B. (2024). Ancilostomiosis dengan skabiosis pada kucing usia 3 bulan. Veterinary Science and Medicine.
16. Sazalli, H. N. H., Kamaruzaman, I. N. A., Tarmizi, M. R. M., Okene, I. A.-A., Shaari, R., & Bamaiyi, P. H. (2016). Ancylostomiasis, giardiasis and isosporiasis in a domestic short hair cat in Kota Bharu, Malaysia. Journal of Advances in Parasitology, 3(3), 75–80. https://doi.org/10.14737/journal.jap/2016/3.3.75.80
17. Williams, A. M., Brown, K. H., Allen, L. H., Dary, O., Moorthy, D., & Suchdev, P. S. (2023). Improving anemia assessment in clinical and public health settings. Journal of Nutrition, 153(Suppl.), S29–S41. https://doi.org/10.1016/j.tjnut.2023.05.032
18. Baihaqi, D., Siswanto, S., & Sukernayasa, I. W. (2025). Leukocyte profile and neutrophil-lymphocyte ratio in goats in Kampung Jawa, North Denpasar, Bali. Buletin Veteriner Udayana, 17(5), 1634–1649.
19. Lin, A., & Loré, K. (2017). Granulocytes: New members of the antigen-presenting cell family. Frontiers in Immunology, 8, 1–8. https://doi.org/10.3389/fimmu.2017.01781
20. Bhanjadeo, R., Patra, R. C., Panda, D., Sahoo, R., Das, D. P., & Mohanty, B. N. (2023). Comparative efficacy of ivermectin and fenbendazole against ancylostomiasis in dogs. Journal of Parasitic Diseases, 47(1), 37–45. https://doi.org/10.1007/s12639-022-01536-9
21. Sultana, T., Jan, U., Lee, H., & Lee, H. (2022). Exceptional repositioning of dog dewormer: Fenbendazole fever. Journal of Personalized Medicine, 12, 4977–4986.
22. Adnyana, I. G. B. D., Soma, I. G., & Widyastuti, S. K. (2024). Scabiosis in domestic cats accompanied by otitis externa, toxocariasis and ankylostomiosis. Jurnal Ilmu dan Kesehatan Hewan, 6(05), 449–463.
23. Tribiños, F., Cuevas, P., Cornejo, I., Sepúlveda, F. V., & Cid, L. P. (2023). A new family of glutamate-gated chloride channels in parasitic sea louse Caligus rogercresseyi: A subunit refractory to activation by ivermectin is dominant in heteromeric assemblies. PLoS Pathogens, 19(3), e1011188. https://doi.org/10.1371/journal.ppat.1011188

24. Hakim, A. M., Sari, D. R., Jawa, M. E., Anafi, S. W., Khatimah, A., & Hasibuan, F. E. (2025). Identification of endoparasites in feces of cats (Felis catus) at APB Antasari Samarinda Clinic using the floating method. Journal of Parasite Science, 9(2), 67–70.