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DERMATITIS ASSOCIATED WITH COINFECTION OF *NOTOEDRES* SP., *OTODECTES* SP., AND *MALASSEZIA* SPP. WITH CONCURRENT *TOXOCARA* SPP. INFECTION IN A DOMESTIC CAT

Dermatitis Akibat Koinfeksi *Notoedres* sp., *Otodectes* sp., dan *Malassezia* spp. Disertai Infeksi *Toxocara* spp. pada Kucing Domestik

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Abstract

Dermatitis in cats is a skin disease that frequently involves multiple causative agents, complicating the diagnostic and clinical management processes. This case involves a co-infection with *Notoedres sp.*, *Otodectes* sp., *Malassezia* spp., and *Toxocara* spp., requiring a comprehensive diagnostic approach and multimodal therapy. This case report describes a comprehensive diagnostic approach and evaluates the success of multimodal therapy in a domestic cat presenting with dermatitis due to multiparasitic co-infection. Diagnosis was established based on anamnesis, physical examination, complete blood count (CBC), superficial skin scraping, cytology using the acetate tape preparation (ATP) method, native and cytological otic swabs, trichogram, and native fecal examinations. The results revealed an infestation of *Notoedres* sp. and *Otodectes* sp., excessive proliferation of *Malassezia* spp., and the presence of *Toxocara* spp. eggs. The CBC showed leukocytosis dominated by lymphocytosis, macrocytic hypochromic anemia, and thrombocytopenia, while the trichogram demonstrated hair shaft damage characterized by irregular fractures, cuticle abrasion, and disrupted medullary continuity associated with severe pruritus. Clinical management was performed using a combination of topical selamectin sarolaner, amoxicillin clavulanic acid, diphenhydramine HCl, chlorpheniramine maleate, pyrantel pamoate-praziquantel, ketoconazole chlorhexidine shampoo, and fish oil supplementation. Clinical improvement became evident after 6 days of treatment and continued until day 9, the final day of evaluation, as indicated by reduced pruritus scores, resolution of crusts and excoriations, and new hair

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growth in the treated area. A comprehensive diagnostic approach coupled with multimodal therapy was effective in managing complex dermatitis due to multiparasitic co-infection in cats. A thorough diagnostic workup is highly recommended in chronic dermatitis cases to support an accurate diagnosis and the selection of appropriate therapy.

Keywords: crusts, excoriation, multimodal therapy, multiparasite, pruritus

Abstrak

Dermatitis pada kucing merupakan penyakit kulit yang sering melibatkan lebih dari satu agen penyebab sehingga dapat mempersulit proses diagnosis dan penatalaksanaan. Kasus ini melibatkan koinfeksi *Notoedres* sp., *Otodectes* sp., *Malassezia* spp., dan *Toxocara* spp., sehingga diperlukan pendekatan diagnosis yang komprehensif serta terapi multimodal. Penulisan laporan kasus ini bertujuan untuk mendeskripsikan pendekatan diagnosis yang komprehensif serta mengevaluasi keberhasilan terapi multimodal pada kucing domestik dengan dermatitis akibat koinfeksi multiparasit. Diagnosis dilakukan berdasarkan anamnesis, pemeriksaan fisik, *complete blood count* (CBC), *superficial skin scraping*, sitologi menggunakan metode *acetate tape preparation* (ATP), otic swab secara natif dan sitologi, trikogram, serta pemeriksaan feses secara natif. Hasil pemeriksaan menunjukkan infestasi *Notoedres* sp., *Otodectes* sp., dan proliferasi *Malassezia* spp. dalam jumlah berlebih, serta ditemukannya telur *Toxocara* spp. Hasil pemeriksaan *complete blood count* (CBC) menunjukkan leukositosis yang didominasi limfositosis, anemia makrositik hipokromik, dan trombositopenia, sedangkan hasil trikogram menunjukkan kerusakan batang rambut berupa patahan *irreguler*, abrasi kutikula, serta gangguan kontinuitas medula yang berkaitan dengan pruritus berat. Penatalaksanaan dilakukan menggunakan kombinasi selamectin sarolaner topikal, amoksisilin asam klavulanat, diphenhydramine HCl yang dilanjutkan chlorpheniramine maleate, pyrantel pamoat praziquantel, sampo ketokonazol klorheksidin, dan suplementasi fish oil. Perbaikan klinis mulai terlihat setelah 6 hari terapi dan berlanjut hingga hari ke-9 sebagai akhir masa evaluasi, ditandai dengan penurunan skor pruritus, menghilangnya krusta dan ekskoriasi, serta pertumbuhan rambut baru. Pendekatan diagnosis yang komprehensif disertai terapi multimodal terbukti efektif dalam menangani dermatitis kompleks akibat koinfeksi multiparasit pada kucing. Pemeriksaan diagnostik yang menyeluruh disarankan pada kasus dermatitis kronis untuk menunjang penegakan diagnosis dan pemilihan terapi yang tepat.

Kata kunci: ekskoriasi, krusta, multiparasit, pruritus, terapi multimodal

INTRODUCTION

Dermatological disorders are among the most common health problems encountered in veterinary practice. Various factors, such as infections, parasitic infestations, allergies, and systemic diseases, can cause skin abnormalities with similar clinical manifestations (Desiandura *et al.*, 2023). Dermatitis in cats has diverse etiologies and is influenced by various factors, such as environmental conditions, housing systems, population density, and individual characteristics that can increase the risk of skin diseases (Gunawan *et al.*, 2024). Cats with access to the outdoors (indoor–outdoor) and stray cats have a higher risk of exposure to various infectious agents than cats kept exclusively indoors. This increased risk is due to more frequent exposure to soil, other animals, and environments contaminated with parasites and pathogenic microorganisms (Wilson *et al.*, 2026; ESCCAP, 2022). Consequently, parasitic diseases remain one of the most common health issues encountered in small animal veterinary practice. For example, a study at the Lilipoet Animal Clinic in Yogyakarta, Indonesia, showed that 69.3% (120/173) of cats with dermatitis had ectoparasite infestations (Gunawan *et al.*, 2024),

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highlighting the need for comprehensive control strategies to prevent the recurrence and transmission of these ectoparasites among cats.

Dermatitis in cats has a variety of causes, including parasitic, bacterial, and fungal infections, allergies, and systemic diseases, which can present with similar clinical manifestations, thereby complicating the diagnosis (Desiandura *et al.*, 2023). Furthermore, interactions between disease-causing agents can exacerbate clinical manifestations. Damage to the skin barrier caused by ectoparasite infestations can increase the colonization of opportunistic microorganisms, whereas endoparasite infestations can affect the host's immune response, thereby increasing susceptibility to co-infections (Bond *et al.*, 2020; Miller *et al.*, 2013).

Several case reports in Indonesia have documented various forms of dermatological co-infections in cats, including a combination of scabies caused by *Notoedres cati* and otitis externa caused by *Otodectes cynotis*, otitis externa involving *Otodectes cynotis*, *Malassezia* spp., and secondary bacterial infections, as well as co-infections of scabies, otitis externa, toxocariasis, and other parasitic infections in domestic cats (Prasetya *et al.*, 2023; Permana *et al.*, 2023; Adinda *et al.*, 2024; Farros *et al.*, 2024; Adnyana *et al.*, 2024).

Infectious skin diseases in cats require a comprehensive diagnostic approach because various causative agents can produce overlapping clinical manifestations in cats. Therefore, developing a differential diagnosis and selecting appropriate diagnostic methods are crucial steps in establishing a diagnosis (Backel & Cain, 2017). Identifying all the causes of a disease is a crucial step in determining the appropriate therapy, thereby improving treatment success and patient prognosis. This case report describes the diagnostic approach and management of dermatitis resulting from co-infection with *Notoedres* sp., *Otodectes* sp., *Malassezia* spp., and *Toxocara* spp. in a cat. We hope that this report will serve as a reference for veterinary practitioners in the systematic and comprehensive diagnosis and management of dermatological cases with multiple etiologies in the future.

RESEARCH METHODS

Clinical Presentation and Medical History

The cat in this case was a feral domestic cat, a 2-year-old female weighing 3 kg, who had been adopted by the owner one week before. According to the owner, since adoption, the cat had exhibited severe itching, characterized by frequent scratching, biting, and licking of her body, even while eating. The owner also complained of a rancid odor emanating from the cat's body (Figure 1). Appetite, water intake, and urination were reported to be normal; however, the owner observed long, white worms passing with feces during defecation.

Physical Examination

Physical examination was performed via inspection, palpation, and auscultation of the normal status in the case cat, which had a heart rate and pulse of 128 beats per minute, a respiratory rate of 24 breaths per minute, a capillary refill time (CRT) of < 2 seconds, a body temperature of 38.8°C, and a body condition score (BCS) of 4/9. Physical examination generally revealed no such abnormalities. However, dermatological inspection revealed very thick crusts on the ears, legs, face, nape of the neck, and tail, accompanied by excoriations and alopecia on the legs. The fairly widespread distribution of lesions, accompanied by crust thickening, indicated that this condition had been present for some time (Figure 1). The cat also frequently scratched, bit, and licked itself, even while eating, indicating severe pruritus with a score of 8/10.

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Supportive Tests

Supportive tests performed on the affected cat included superficial skin scraping, native and cytological otic swabs, acetate tape preparation (ATP), and native fecal examinations. A hematology test (complete blood count) using a hematology analyzer (Genvet® VH30, China) revealed leukocytosis dominated by lymphocytosis, accompanied by hypochromic macrocytic anemia characterized by decreased hemoglobin levels (9.1 g/dL), increased mean corpuscular volume (MCV; 67.4 fL), decreased mean corpuscular hemoglobin concentration (MCHC; 29.1 g/dL), and thrombocytopenia (89 × 10^3/µL) (Table 1). Based on Figure 3, a superficial skin scraping examination revealed the presence of *Notoedres* sp. mites, which are morphologically round, have short legs, an anus located on the dorsal side, and exhibit concentric lines (dorsal concentric striations) on their cuticle, a characteristic feature of the genus *Notoedres* sp. (Bowman, 2021). Cytological examination was performed using the acetate tape preparation (ATP) method. The preparations were then stained with MDT stain (Indoreagen®, PT Segara Husada Mandiri, Indonesia) before being examinde under a microscope. The examination results showed a proliferation of *Malassezia* spp. of more than 20–30 yeast cells per field. Microscopically, *Malassezia* spp. appear as oval-or footprint- or peanut-shaped yeast cells with thick cell walls that reproduce via unipolar budding (Miller *et al.*, 2013). Native examination of the otic swab revealed the presence of adult *Otodectes* sp. mites, which have oval, white bodies and four pairs of legs with long, unsegmented pedicels on the first, second, and fourth legs and short pedicels on the third legs, consistent with the morphological characteristics of *Otodectes cynotis* (Taylor *et al.*, 2016). Cytological examination of the ear swab also revealed the proliferation of *Malassezia* spp. with morphology similar to that observed in skin cytology. Additionally, a native fecal examination identified *Toxocara* spp. eggs that were round to nearly round, brown, thick-walled with a rough outer surface (pitted shell), and contained a single mass of cells that had not yet undergone segmentation, consistent with the characteristics of *Toxocara* spp. eggs (Zajac & Conboy, 2021). Trichogram analysis (Figure 4) showed that most of the hair was in the anagen phase, with hair shaft damage in the form of irregular breaks. In addition, some hair shafts show abrasion of the cuticle layer and disruption of the medulla's continuity, characterized by the loss of pigment in some segments of the hair, making them appear more transparent, whereas the cortex remains intact.

Diagnosis and Prognosis

Based on the medical history, clinical examination, and results of ancillary tests, the cat in this case was diagnosed with a co-infection consisting of scabies, otitis externa, *Malassezia*sis, and toxocariasis. The prognosis for this case is favorable because the cat's general condition remains good, its appetite is normal, and there is no evidence of involvement of other organs or systemic complications that could worsen the patient's condition. Furthermore, effective treatment options are available for all identified causative agents when administered comprehensively and accompanied by improved patient care.

Treatment

Treatment was administered to address ectoparasite and endoparasite infestations, secondary infections, and pruritus, as well as to support skin recovery. Antiparasitic therapy was administered using a spot-on antiparasitic treatment (Revolution Plus®; Zoetis Inc., United States) containing selamectin (6 mg/kg body weight) and sarolaner (1 mg/kg body weight), applied topically to the interscapular region once, with a repeat application after 30 days. To treat the secondary bacterial infection, amoxicillin and clavulanic acid (CoAmoxiclav®, PT. Meprofarm, Indonesia) was administered orally at a dose of 15 mg/kg body weight every 12 h for seven days.

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Antihistamine therapy began with an intramuscular injection of diphenhydramine HCl at a dose of 2 mg/kg body weight, followed by oral administration of chlorpheniramine maleate at a dose of 2 mg/cat once daily for seven days. Endoparasite treatment was administered using Anthel Cat® (PT. Medion Farma Jaya, Indonesia), which contains 20 mg of praziquantel and 230 mg of pyrantel pamoate per tablet, at a dose of one tablet per 4 kg of body weight administered orally, followed by a repeat dose after 14 days. As supportive therapy, the affected cat was administered fish oil (Mei Fah Tunghai®; Shandong Yuwang Pharmaceutical Co., Ltd., China) orally once daily for 14 days. In addition, the affected cats were bathed with Sebazole® shampoo (Virbac, Australia), which contains 10 mg/mL econazole nitrate, 19.4 mg/mL sulfur (as 75 mg sodium thiosulfate), 35 mg/mL sodium salicylate, 5 mg/mL chloroxylenol, 2% miconazole nitrate, and 2% chlorhexidine gluconate, twice a week. An overview of the treatment regimens is presented in Table 2.

RESULTS AND DISCUSSION

Results

The evaluation results showed progressive clinical improvement during the treatment period, as indicated by a decrease in the pruritus score from 8/10 to 1/10, disappearance of crusts and excoriations, improvement in alopecia accompanied by hair regrowth, and the absence of new lesions (Table 3 and Figure 2). The evaluation was conducted after the case cat received combination therapy, which included control of ectoparasites and endoparasites, treatment of secondary infections, antihistamine therapy, and supportive care. During the observation period, the cat showed gradual clinical improvement.

A clinical evaluation on day 5 after the start of therapy showed a good response, marked by the beginning of the shedding of most of the crusts, particularly on the face, ears, nape of the neck, and extremities, accompanied by a decrease in the intensity of pruritus, as indicated by a reduction in the frequency of scratching, licking, and biting in the affected areas. On day 6, the excoriated lesions began to heal, the areas of alopecia appeared cleaner, and only a few scabs remained in some areas. Clinical improvement became even more evident on day 9, marked by the disappearance of scabs, a significant reduction in pruritus, the beginning of new hair growth in areas that had previously experienced alopecia, and skin that appeared cleaner, with no new lesions detected.

Discussion

This case was diagnosed as a co-infection with *Notoedres* sp., *Otodectes* sp., *Malassezia* spp. and *Toxocara* spp. Free-living cats without routine care are believed to be the primary predisposing factor, as they are at a higher risk of exposure to ecto-and endoparasites from the environment and other animals (Bowman, 2021; ESCCAP, 2022). The clinical manifestations included severe pruritus with a Pruritus Visual Analog Scale (PVAS) score of 8/10, generalized crusting, excoriations, and multifocal alopecia, consistent with the clinical picture of chronic notoedric mange. *Notoedres* sp. burrows into the stratum corneum, triggering a hypersensitivity reaction that causes severe pruritus, while repeated scratching, licking, and biting exacerbate skin damage, leading to crusts, excoriations, and hair loss (Miller *et al.*, 2013; Taylor *et al.*, 2016). These findings are consistent with those of Prasetya *et al.* (2023); however, this case demonstrates greater complexity due to the presence of *Malassezia* spp. infection and *Toxocara* spp. infestation.

The presence of a characteristic rancid odor on the skin and in the ear canal indicates the proliferation of *Malassezia* spp. Cytology revealed an excessive number of *Malassezia* spp. (>20 cells/field of view), and a native examination revealed *Otodectes* sp. mites in the ear.

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Malassezia spp. are part of the normal skin flora that become opportunistic pathogens when there is damage to the skin barrier, increased moisture, or accumulation of debris due to parasitic infestation or chronic inflammation (Bond *et al.*, 2020). *Otodectes* sp. infestation also increases cerumen production and inflammation of the ear canal, thereby promoting the proliferation of *Malassezia* spp (Miller *et al.*, 2013). The combination of an increased MCV and decreased MCHC is typically seen in regenerative anemia, although the regenerative status in this case could not be confirmed because a reticulocyte count was not performed (Furman *et al.*, 2014). The combination of an increased MCV and decreased MCHC is typically seen in regenerative anemia, although the regenerative status in this case could not be confirmed because the reticulocyte count was not performed (Furman *et al.*, 2014). In the context of this case, these hematological findings represent systemic changes associated with the cat's pathological condition involving multiparasitic co-infection. A trichogram examination showing a predominance of anagen-phase hairs accompanied by irregular hair shaft breaks, cuticle abrasions, and disruption of medullary continuity supports the conclusion that alopecia is primarily caused by mechanical trauma resulting from chronic pruritus rather than a primary hair growth disorder (Hnilica & Patterson, 2017).

Management is multimodal, combining causative, topical, symptomatic, and supportive therapies based on the causative agent and the clinical manifestations. This approach is adopted because cases often involve multiple causative agents and clinical manifestations that require different therapeutic targets; therefore, therapies are administered gradually according to clinical needs and not simultaneously. Revolution Plus® was selected as the primary antiparasitic therapy because it contains selamectin and sarolaner, which are effective against various ectoparasites. Selamectin works by increasing the permeability of the nerve and muscle cell membranes of parasites through glutamate-gated chloride channels, thereby causing their paralysis and death. Sarolaner inhibits GABA and glutamate channels in arthropods (Beugnet *et al.*, 2019; European Medicines Agency, 2020). In this case, the treatment was intended to control ectoparasite infestation identified through superficial skin scraping and otic swab examinations. Before topical application, the cat was bathed with Sebazole® to help reduce crusts and debris on the skin's surface, thereby cleaning the skin and facilitating contact between the active ingredients and the lesions. Sebazole® contains econazole nitrate (10 mg/mL), sulfur as sodium thiosulfate (19.4 mg/mL), sodium salicylate (35 mg/mL), and chloroxylenol (5 mg/mL). Sulfur and sodium salicylate promote keratolysis and the shedding of scales and crusts, whereas econazole nitrate, an imidazole-class antifungal, inhibits ergosterol synthesis in the fungal cell membrane, thereby disrupting membrane integrity and inhibiting the growth of *Malassezia* spp. Chloroxylenol exhibits antiseptic activity against bacteria and fungi, thereby reducing the skin microbial load (Gupta & Foley, 2015; Virbac, 2025). Thus, topical therapy is used as an adjunctive treatment to improve the condition of the skin surface while controlling the proliferation of *Malassezia* spp.

Treatment for endoparasites is based on stool test results showing the presence of *Toxocara* spp. eggs, as well as the owner's medical history reporting the presence of worms in the feces of the cat. Revolution Plus® was administered as the initial antiparasitic therapy, followed by Anthel Cat® three days later, which contains pyrantel pamoate and praziquantel, to treat *Toxocara* spp. infection. Pyrantel causes spastic paralysis in nematodes, whereas praziquantel increases membrane permeability to calcium ions, leading to damage to the parasite's integument (Bowman, 2021; Papich, 2021). Although a quantitative egg-per-gram (EPG) examination was not performed, the detection of *Toxocara* spp. eggs in the feces and a history of worms in the feces served as the basis for administering endoparasite therapy. Symptomatic therapy was administered to help control pruritus and reduce trauma caused by scratching, licking, and biting of the lesion sites, whereas fish oil supplementation was provided as

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supportive therapy to aid in maintaining skin health. This approach aims to address the primary cause while reducing clinical manifestations and supporting skin barrier recovery. Clinical improvement began to be observed as early as the fifth day of therapy, marked by the shedding of crusts, a decrease in the pruritus score to 4/10, and a reduction in the frequency of scratching, licking, and biting of the affected area. In the next stage, the excoriations healed, followed by the shedding of scabs and the onset of new hair growth in the areas of alopecia, continuing through the 9th day of therapy, which marked the end of the evaluation period. This improvement indicates that controlling the causative agent, combined with therapy to reduce inflammation and pruritus, contributes to breaking the itch-scratch cycle, thereby supporting the healing of skin lesions and hair regrowth (Miller *et al.*, 2013; Hnilica & Patterson, 2017). The success of therapy in this case is also thought to have been influenced by a multimodal approach that focused not only on controlling ectoparasites but also on controlling the proliferation of *Malassezia* spp. and *Toxocara* spp. infestations, thereby comprehensively addressing the various factors involved in sustaining the inflammatory process (Bond *et al.*, 2020; Bowman, 2021).

Although it yields a good clinical response, the multimodal approach in this case has limitations, as it involves the use of several types of medications with different therapeutic targets, thereby increasing the complexity of management and potentially increasing the risk of side effects and drug interactions, particularly when used concurrently. Therefore, multimodal therapy with multiple drugs should be considered in cases involving more than one causative agent or clinical manifestations requiring different treatments and should be tailored to each patient's condition and needs. Therapy should be administered based on diagnostic test results and clear clinical indications, considering the sequence and duration of each drug's administration to avoid unnecessary drug administration. Post-treatment hematological testing and liver function evaluation were not performed in this case; therefore, the hematological response and hepatic function status during and after therapy could not be objectively assessed. Given the use of several systemic medications, liver function should be evaluated using serum biochemical parameter testing before and/or during therapy, especially if medications that may affect hepatic function are used or if the therapy is administered for a longer duration. Monitoring hematology and liver function can also help detect adverse effects of therapy early on and inform decisions regarding whether to continue, adjust, or discontinue treatment. Therefore, clinical success in this case should be interpreted with an awareness of the limitations of safety monitoring for this type of treatment.

CONCLUSION AND SUGGESTIONS

Conclusion

This case of dermatitis in a cat involved a coinfection with *Notoedres* sp., *Otodectes* sp., *Malassezia* spp., and *Toxocara* spp., which was successfully diagnosed using a comprehensive diagnostic approach, including medical history, clinical examination, superficial skin scraping, otic swab, acetate tape preparation (ATP) cytology, fecal examination, trichogram, and hematology testing. Management with multimodal therapy combining antiparasitic, antimicrobial, antihistamine, and anthelmintic treatments, as well as supportive care, resulted in a good clinical response, characterized by a reduction in the pruritus score to 1/10, resolution of crusts and excoriations, and hair regrowth during the evaluation period. A comprehensive diagnostic approach, accompanied by therapy targeting all causative agents, plays a crucial role in the successful management of complex dermatitis resulting from multiple parasitic co-infections in cats.

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Suggestions

Chronic dermatitis in cats requires comprehensive diagnostic testing to identify possible co-infections so that treatment can be tailored to the causative agents and the clinical condition of the patient. The use of multimodal therapy should be tailored to the clinical indications for each agent and accompanied by monitoring of treatment response and safety, including hematological and liver function tests. Educating owners about parasite control, environmental sanitation, and skin care is essential to reduce the risk of reinfestation and disease recurrence.

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Tables

Table 1. Complete Blood Count (CBC) Test Results

Parameter / Item	Result	Reference Interval	Unit	Interpretation
White Blood Cell	35.11	5.5–19.5	10^3/µL	Increased
Lymphocyte Absolute	28.3	0.8–7.0	10^3/µL	Increased
Mid-size Cell Absolute	1.79	0–1.9	10^3/µL	Normal
Granulocyte Absolute	5.02	2.1–15.0	10^3/µL	Normal
Lymphocyte Percentage	80.6	12–45	%	Increased
Mid-size Cell Percentage	5.1	2–9	%	Normal
Granulocyte Percentage	14.3	35–85	%	Decreased
Red Blood Cell	4.64	4.6–10.0	10^6/µL	Normal
Hemoglobin	9.1	9.3–15.3	g/dL	Decreased
Mean Corpuscular Hemoglobin Concentration	29.1	30–38	g/dL	Decreased
Mean Corpuscular Hemoglobin	19.6	13–21	pg	Normal
Mean Corpuscular Volume	67.4	39–52	fL	Increased
Red Cell Distribution Width–Coefficient of Variation	12.4	14–18	%	Decreased
Red Cell Distribution Width–Standard Deviation	39.4	35–56	fL	Normal
Hematocrit	31.3	28–49	%	Normal
Platelet	89	100–514	10^3/µL	Decreased
Mean Platelet Volume	8.5	5–11.8	fL	Normal
Platelet Distribution Width	20.2	10–18	fL	Increased
Plateletcrit	0.075	0.1–0.5	%	Decreased
Platelet–Large Cell Ratio	12.2	13–43	%	Decreased

Source: Reference intervals derived from an automated veterinary hematology analyzer (Genvet® VH30).

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Table 2. Therapeutic Management in the Cat

Treatment / Therapy	April 26, 2025	April 27, 2025	April 28, 2025	April 29, 2025	April 30, 2025	May 01, 2025	May 02, 2025	May 03, 2025	May 04, 2025
Sebazole	✓					✓			
Revolution Plus	✓								
Diphenhydramine HCl	✓								
Chlorpheniramine maleate		✓	✓	✓	✓	✓	✓	✓	
Amoxiclav		✓	✓	✓	✓	✓	✓	✓	
Anthel Cat			✓						
Fish Oil	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: ✓ indicates that the treatment was administered on the specified date.

Table 3. Evaluation of Clinical Improvement in the Cat

Clinical Parameter	April 24, 2025	April 30, 2025	May 01, 2025	May 04, 2025
Pruritus (PVAS)	8/10	4/10	2/10	1/10
Crusts	Very thick	Starting to slough	Minimal remaining	Absent
Excoriations	Severe	Decreased	Nearly healed	Absent
Alopecia	Multifocal	Persistent	Improving	Hair regrowth starting
Hair Regrowth	Absent	Not yet visible	Beginning to appear	Clearly visible
New Lesions	Present	Absent	Absent	Absent

Note: PVAS (Pruritus Visual Analog Scale) 0–10; higher scores indicate more severe pruritus. Scale adapted for cats based on Carrasco *et al.* (2022) and Rybníček *et al.* (2009).

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Figures

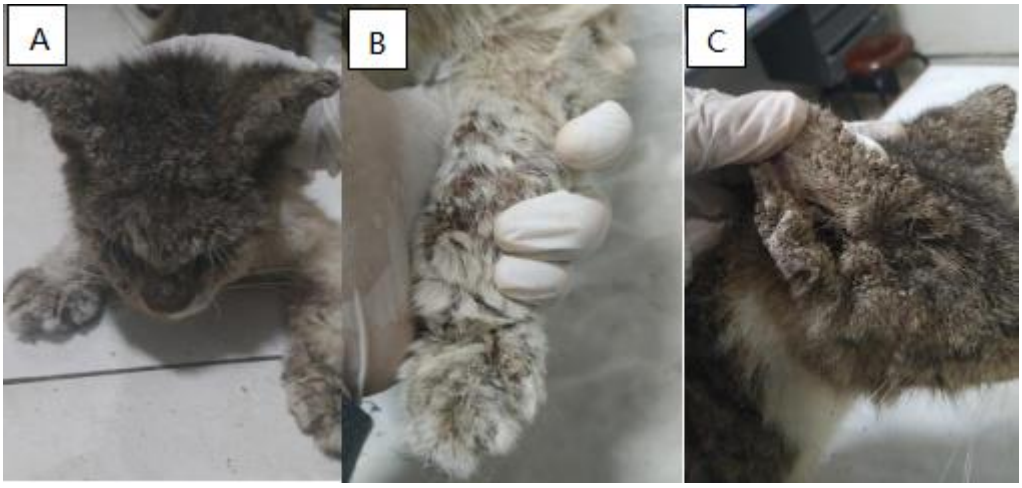

Figure 1. Initial clinical manifestations of the affected cat prior to therapy. (A) Thick crusts on the face and pinna. (B) Excoriations and alopecia on the cranial limbs. (C) Thick crusts and alopecia on the medial surface of the pinna.

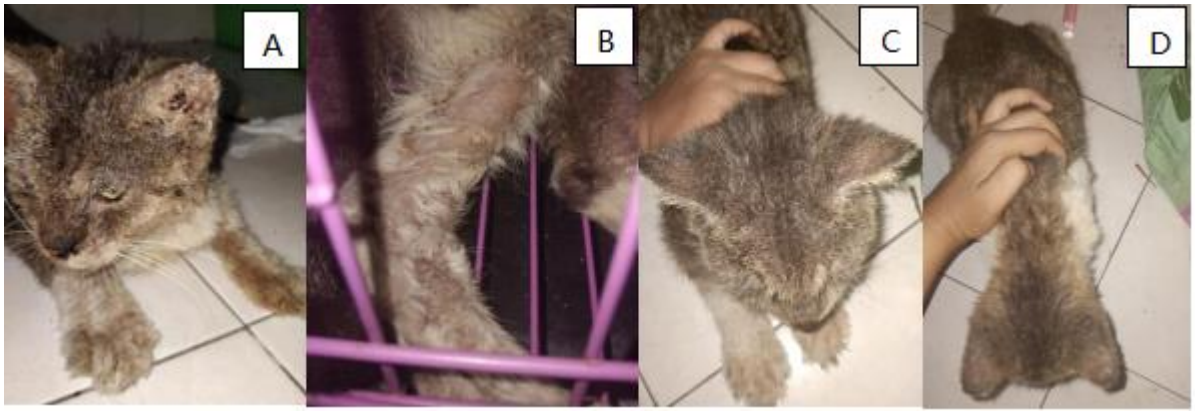

Figure 2. Clinical progression of the case cat during therapy. (A) Day 5 showing crust sloughing. (B) Day 6 showing resolution of excoriations and reduction of crusts. (C & D) Day 9 showing complete resolution of crusts and visible hair regrowth in alopecic areas.

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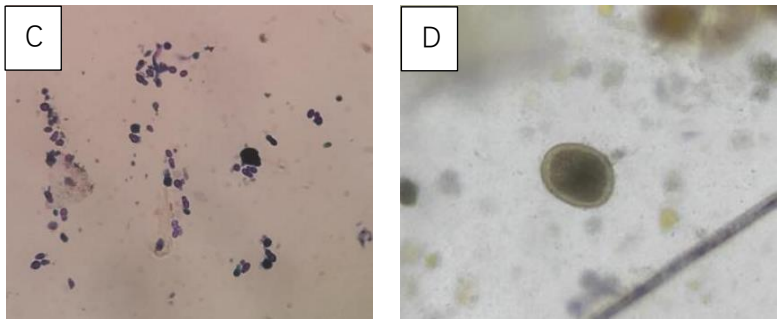

Figure 3. Ancillary diagnostic findings. (A) *Notoedres* sp. on superficial skin scraping. (B) *Otodectes* sp. on direct otic swab examination. (C) *Malassezia* spp. on acetate tape preparation (ATP). (D) *Toxocara* spp. eggs on direct fecal smear.

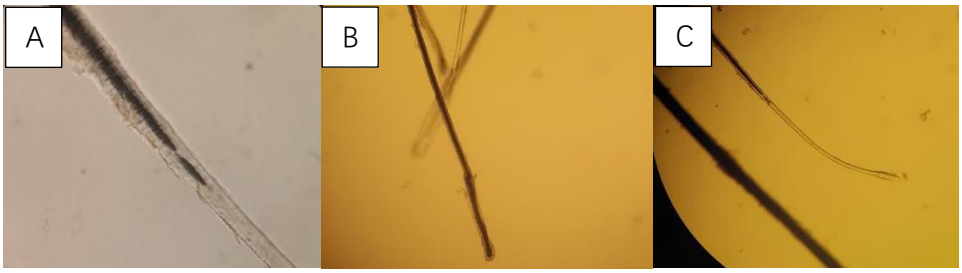

Figure 4. Trichogram findings. (A) Cuticular damage and disruption of medullary continuity in the hair shaft. (B) Irregular hair shaft fracture. (C) Anagen hair bulb showing partial loss of medullary pigment.

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