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MANAGEMENT OF CHRONIC OTITIS EXTERNA, RHINITIS, AND CONJUNCTIVITIS CAUSED BY *PSEUDOMONAS* SP., *BACILLUS* SP., AND *CANDIDA* SP. INFECTION IN A PERSIAN CAT

Penanganan Otitis Eksterna Kronis, Rinitis dan Konjungtivitis Akibat Infeksi *Pseudomonas sp.*, *Bacillus sp.*, dan *Candida sp*. pada Kucing Persia

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Abstract

Chronic otitis externa is an inflammatory condition that can involve multiple pathogens such as bacteria and fungi, and may be associated with disorders of adjacent sensory systems, including the nose and eyes. This case report aims to describe the management of a case of chronic otitis externa accompanied by rhinitis and conjunctivitis in a six-year-old female Persian cat. Diagnostic methods include history taking, complete physical examination, and supporting examinations such as hematology, otoscopy, rapid testing for feline calicivirus and feline herpesvirus-1, as well as bacterial and fungal isolation and identification from ear, nasal, and ocular exudates. Results revealed infection involving Pseudomonas sp., Bacillus sp., and Candida sp. in the ears, and Staphylococcus sp. in the nose and eyes. Otitis therapy involved ear cleaning using Ilium Oticlean® and topical application of a combination of gentamicin, nystatin, and fluocinolone acetonide (Topigen®) administered at three drops q12h for 14 days. Rhinitis and conjunctivitis therapy included systemic antibiotic amoxicillin-clavulanic acid (ClaPet 250®) at 20 mg/kg BW q12h for 7 days, and anti-inflammatory methylprednisolone at 1 mg/kg BW q24h for 3 days. A positive therapeutic response for rhinitis was observed after 7 days of treatment, whereas conjunctivitis showed slower improvement and required additional therapy with Erlamycetin Plus® ophthalmic ointment 3.5 g, applied once q12h for 5 days. Treatment of chronic otitis externa showed significant improvement after 14 days. Therefore, management of otitis externa, rhinitis, and conjunctivitis requires a multimodal approach and comprehensive diagnosis to confirm the etiology and support appropriate therapy. Special attention to environmental hygiene and care practices is essential to prevent recurrence.

Keywords: chronic otitis externa, conjunctivitis, rhinitis, persian cat

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Abstrak

Otitis eksterna kronis merupakan kondisi inflamasi yang dapat melibatkan beberapa patogen seperti bakteri dan jamur yang dapat berhubungan dengan gangguan pada sistem sensorik terdekat yaitu hidung dan mata. Laporan kasus ini bertujuan untuk menjelaskan penanganan kasus otitis eksterna kronis yang disertai rinitis dan konjungtivitis pada seekor kucing Persia betina berusia enam tahun. Metode diagnosis meliputi anamnesis, pemeriksaan fisik lengkap, pemeriksaan penunjang seperti; pemeriksaan hematologi, otoskopi, rapid test Feline calicivirus dan Feline herpesvirus-1, serta isolasi dan identifikasi bakteri dan jamur dari eksudat teling, hidung, dan mata. Hasil menunjukkan adanya infeksi oleh *Pseudomonas* sp., *Bacillus* sp., dan *Candida sp.*, pada telinga serta *Staphylococcus sp*. pada hidung dan mata. Terapi otitis melibatkan pembersihan telinga menggunakan Ilium Oticlean®, aplikasi topikal kombinasi gentamicin, nystatin, dan fluocinolone acetonide (Topigen®) diberikan dengan dosis tiga tetes q12h selama 14 hari. Terapi rinitis dan konjungtivitis melibatkan pemberian antibiotik sistemik amoxicillin-clavulanat acid (ClaPet 250®) dengan dosis 20 mg/kg BB q12h selama 7 hari dan antiinflamasi metilprednisolon dengan dosis 1 mg/kg BB q24h selama 3 hari. Respon positif terhadap terapi rinitis terlihat setelah 7 hari pengobatan, namun konjungtivitis menunjukkan perbaikan lambat dan memerlukan terapi tambahan berupa Erlamycetin plus® salep mata 3,5 g diberikan dengan dosis satu oles q12h selama 5 hari. Terapi terhadap otitis eksterma kronis telah memberikan perubahan yang baik setelah 14 hari pengobatan. Oleh karena itu, penanganan otitis eksterna, rinitis dan konjungtivitis memerlukan pendekatan multimodal dan diagnosis yang komprehensif untuk meneguhkan etiologi dan menunjang terapi yang tepat. Perhatian khusus terhadap kebersihan lingkungan dan kebiasaan perawatan sangat diperlukan untuk mencegah kekambuhan.

Kata kunci: otitis eksterna kronis, konjungtivitis, rinitis, kucing Persia.

INTRODUCTION

Pet cat ownership has increased in recent years, both in developed countries and in the Asia-Pacific region. This trend has contributed to the rapid growth of the animal care and healthcare industry, while also increasing the intensity of human-cat interactions, particularly in urban environments. Amid the increasing number of pet cats, frequently reported primary health problems include upper respiratory tract disorders, eye diseases, and ear diseases. Feline Upper Respiratory Tract Disease (FURTD) and conjunctivitis are common in veterinary clinics, while otitis externa occurs as both a primary and secondary problem in chronic cases. These conditions not only compromise the cat's well-being but also pose diagnostic and therapeutic challenges due to their multifactorial causes (Kennedy et al., 2024; Bader et al., 2024).

Ear, nose, and eyes are the three primary sensory organs in cats, playing a vital role in helping them interact with their environment. These three organs are not only functionally separate but also anatomically interconnected, forming a complex and integrated sensory system. The proximity of these three organs allows for efficient sensory processing, as does the anatomical connection between the ear canal, nasal cavity, and eye (nasolacrimal duct), which connects the eye and nose (Fonseca et al., 2022). The anatomical proximity and vascular-lymphatic pathways allow for the cross-distribution of pathogens and inflammatory mediators, making the ear, nose, and eyes frequently susceptible to various problems, ranging from otitis media and rhinitis to conjunctivitis (Hom & Bielory, 2013).

Otitis is an inflammation of the ear that can involve one or more parts of the ear. Based on the location of the inflammation, otitis is divided into three categories: otitis externa, otitis media, and otitis interna (Subadiyasa et al., 2023). Otitis externa is an inflammation that occurs in the outer ear canal and sometimes in the earlobe (Aritonang et al., 2020; Bollez et al., 2018). Otitis

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in cats is a dermatological disorder with a complex, multifactorial etiology (Hiblu et al., 2020). Otitis can be caused by three main agents: parasites, bacteria, and fungal (Arisov et al., 2020). Clinically, otitis externa can be unilateral or bilateral, acute or chronic, and mild to severe. Clinical findings of otitis externa include head-shaking, pruritus, pain, and discomfort when palpating the animal's ear (Moriello, 2013). Successful treatment depends on identifying the cause and factors involved, so the treatment protocol for otitis externa should include ear cleaning, management of pain and pruritus, and administration of topical and/or systemic medications (Hiblu et al., 2020). The prognosis for otitis externa varies; in some cases, it can be managed, does not recur, and can be cured with medication for a few weeks or surgery. However, long-term management can also occur, taking months, and recur if the animal does not respond to routine therapy (Moriello, 2013).

Rhinitis is a disease that occurs in the upper respiratory tract, especially in the nasal mucosa, with clinical signs such as sneezing, coughing, and discharge from the nasal cavity (Indriana et al., 2024). In cases of rhinitis, it is often accompanied by conjunctivitis. Conjunctivitis is an inflammatory reaction that occurs in the mucous membrane (conjunctiva) and can be caused by infectious and non-infectious agents (Gulaydin et al., 2024). Rhinitis and conjunctivitis can be caused by several organisms, either singly or in combination. These organisms include Feline herpesvirus-1, Feline calicivirus, Bordotella bronchiseptica, Chlamydophila felis, and Mycoplasma felis (Harvey & Haar, 2017). Some potential pathogenic bacteria in cases of feline rhinitis include *Pseudomonas aeruginosa, Escherichia coli, Viridans streptococci, Staphylococcus pseudintermedius, Pasteurella multocida, Corynebacterium sp., Actinomyces sp., Bordetella brochiseptica, and Mycoplasma sp*. (Johnson et al., 2005). Some pathogenic bacteria that cause conjunctivitis include *Chlamydophilia felis, Mycoplasma felis, M. gatae, M. arginine, B. bronchiseptica, Staphylococcus epidermidis, and S. aureus.* (Kielbowicz et al., 2015).

This case report describes chronic otitis externa due to *Candida sp*., *Pseudomonas sp*., and *Bacillus sp*. accompanied by rhinitis and conjunctivitis due to *Staphylococcus sp*. in a 6-year-old cat. This article is important to discuss because it describes a case of chronic otitis externa accompanied by rhinitis and conjunctivitis in a Persian cat with bacterial and fungal co-infection, namely *Pseudomonas sp., Bacillus sp., and Candida sp*., which are relatively rarely reported simultaneously in a single clinical case. This combination of infectious agents has the potential to complicate the diagnosis and therapy process, especially in chronic cases that do not respond to treatment. Therefore, this article aims to present a description of the treatment procedures applied and their results, so that they can be used as a reference in handling similar cases in the future.

RESEARCH METHODS

Signalment and Anamnesis

The animal examined was a 6-year-old female Persian cat weighing 2.55 kg. The cat's coat was a combination of white, orange, and brown calico (Figure 1). The owner reported that for the past four months, the cat had noticed an unpleasant odor coming from its ears, and that the cat frequently shook its head, appeared to be scratching its left ear, and that it was always in pain when touched. A month before these signs were observed, the owner reported thick brown discharge in both of the cat's ears. The owner cleaned the ears daily using cotton swabs and 70% alcohol. From the beginning, the owner cleaned the left ear more frequently due to the apparent greater volume of discharge, while the right ear was relatively clean. The cat was often kept in a cage and rarely went outside. The cage was known to be dirty and damp due to

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lack of sunlight. The owner had provided a product with ear mites treatment indications purchased from an online store but there was no change.

In addition to the ear complaints, the owner also reported that the cat had been sneezing frequently and had been experiencing redness and discharge from its nose and eyes for the past two weeks. The owner has 10 other cats, one of which has exhibited similar symptoms. The cat is fed commercial dry food. It has never been vaccinated and was only dewormed three months ago.

Physical Examination

The cat case was examined on June 11, 2025. The physical examination was conducted using inspection, smelling, palpation, auscultation, percussion, and counting. The physical examination included vital signs and present status, including heart rate, pulse, Capillary Refill Time (CRT), respiratory rate, temperature, and Body Condition Score (BCS) based on guidelines issued by Royal Canin, using visual and palpation scales (Royal Canin, 2025). In addition, a physical examination is also performed, examining the entire organ system, including a general examination, skin and nails, mucosa, circulation, respiration, digestion, urogenital, musculoskeletal, nervous, lymph node, ear, and eye examinations.

Laboratory Investigation

Supporting examinations include hematology, otoscopy, rapid antigen tests for Feline Calicivirus (FCV) and Feline Herpesvirus-1 (FHV-1), and bacterial/fungal isolation and identification. Hematology examinations aim to determine the patient's physiological condition and support the confirmation of the disease diagnosis. Blood is drawn from the cephalic vein and placed into a vacutainer tube containing anticoagulant, then examined using an automated hematology analyzer (Idexx ProCyte Dx®, United States). The results of the hematology examination are then compared with normal reference values derived from a hematology analyzer device, which have been adjusted for the cat species, to identify the presence of hematological parameters that are outside the normal range.

An otoscope ear examination aims to assess the condition of the ear canal, detect the presence of foreign objects or parasites, determine the severity of otitis, guide cleaning and treatment procedures, and monitor the response to therapy in the ear. In this case, the ear examination uses the Dr. Isle™ Digital Otoscope to obtain real-time visualization of the ear canal and document the findings in the form of photos or videos. The examination is performed by gently lifting the base of the pinna to straighten the ear canal, then inserting the Dr. Isle™ Digital Otoscope speculum into the ear canal at a 30°–45° angle, a distance of 1–1.5 cm, without touching the tympanic membrane. The results of the otoscope examination include the color and vascularization of the ear canal wall, the presence of secretions, the integrity of the tympanic membrane if observed, and the presence of foreign objects, parasites, or polyps.

The FCV and FHV-1 rapid antigen test aims to detect calicivirus and herpesvirus infections in cats, which are the leading causes of upper respiratory tract disease. The test works based on the principle of immunochromatography, where viral antigens in the sample react with antibodies on the test strip (Koczula et al., 2016). A positive result is indicated by two lines, a test line and a control line, while a negative result shows only one control line. If the control line does not appear, it is considered invalid.

Isolation and identification of bacteria/fungi aims to determine infectious agents such as fungi and/or bacteria. This examination begins by taking samples of earwax from the ears, eyes, and nose using cotton swabs, then placing them in transport media tubes containing buffered fluid. The prepared samples are then inoculated into bacterial growth media such as Blood Agar (BA)

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and MacConkey Agar (MCA) and fungal growth media such as Sabouraud Dextrose Agar (SDA). The samples are incubated at 37°C for 18–24 hours to allow bacterial and/or fungal colonies to grow. The colonies that grow are then identified macroscopically and microscopically. This examination is conducted at the Denpasar Veterinary Center as a reference laboratory.

RESULTS AND DISCUSSION

Results

Physical Examination

Based on the physical examination of the case animals, the examination results data were obtained which are presented in Table 1 and vital signs in Table 2.

Examination of the animal's vital signs showed that the case cat was experiencing tachypnea. The present status showed a BCS score of 4/9, indicating an ideal body condition, slightly emaciated, with easily palpable ribs without excess fat, and a visible abdominal curve. Based on the physical examination using inspection, smelling, palpation, and auscultation methods, it was noted that serous discharge was observed from both nostrils and the case cat was continuously sneezing. Upon examination of the eyes, serous discharge was observed from both eyes and the conjunctiva showed mild redness (Figure 1). An ear examination observed purulent exudate coming from the case cat's left ear (Figure 2). Upon smelling, a very strong foul odor was detected from the case cat's left ear, indicating pathogen colonization. Upon palpation of the left ear, the case cat showed a pain response, and was observed constantly scratching the left ear area and shaking its head. The left parotid lymph node was swollen upon palpation.

Laboratory Investigation

The hematology results of the case cat are presented in Table 3. The case cat's hematology showed an increase in lymphocytes and a decrease in granulocytes, RDWCV, and RDWSD. The increase and decrease in several hematology parameters were not significantly different from normal values. Ear examination with an otoscope showed the presence of ceruminous and sanguineous exudate in the left ear, especially in the external acoustic meatus (figure 3). When the FCV and FHV-1 antigen rapid test was performed, it showed a single control line, meaning the test result was negative. The results of the isolation and identification of bacteria and fungi showed the growth of *Pseudomonas sp*. and *Bacillus sp*. bacteria as well as the growth of *Candida sp*. fungi in the case cat's ear (figures 4 and 5). In addition, *Staphylococcus sp*. bacteria were also found in the case cat's nose and eyes (figures 4 and 5).

Diagnosis

Based on anamnesis, clinical signs, physical examination, and supporting examinations in the form of hematology, otoscopy, and isolation and identification of bacteria and fungi, the cat was diagnosed with chronic otitis externa due to *Candida sp*., *Pseudomonas sp*., and *Bacillus sp*. accompanied by rhinitis and conjunctivitis due to *Staphylococcus sp*. with a good prognosis (fausta).

Therapy

Therapy begins with ear cleaning using Ilium Oticlean® (Troy Laboratories Pty Ltd, Australia) cleaning fluid containing propylene glycol, malic acid, benzoic acid, and salicylic acid to dissolve dirt and thick exudate, lower the pH of the ear canal, and provide a mild keratolytic effect so that the ear canal is cleaner and the topical preparation can work optimally. Application is done twice daily, using sterile cotton to remove any remaining fluid without injuring the ear

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canal. Once the ear canal is relatively clean, ear drops are given in the form of a combination of gentamicin sulfate, nystatin, and fluocinolone acetonide (Topigen® Troy Laboratories Pty Ltd, Australia.). Topigen® is given at a dose of three drops q12h in the inflamed ear, for fourteen days.

Along with ear therapy, eye exudate was cleaned using sterile 0.9% NaCl solution twice daily to remove serous exudate and debris on the corneal and conjunctival surfaces, prevent mechanical irritation, and prepare the eye area for further topical therapy. The case cat also received systemic therapy in the form of a combination of antibiotics amoxicillin and clavulanic acid (ClaPet 250® Veko Care Private Limited, India) at a dose of 20 mg/kg BW q12h for 7 days and the anti-inflammatory methylprednisolone at a dose of 1 mg/kg BW q24h for 3 days.

Despite ongoing systemic therapy, the left eye still showed excessive serous exudate and conjunctival erythema on the seventh day. Therefore, eye therapy was continued with Erlamycetin plus® ophthalmic ointment 3.5 g (PT. Erela, Semarang, Indonesia) at a dose of one application every 12 hours for 5 days.

Discussion

Otitis externa is an inflammation of the external ear canal, including the pinna, the outermost part of the ear, composed of elastic cartilage and covered with skin. This condition can be acute or chronic (persistent or recurring for ≥ 3 months). In chronic inflammation, the ear canal experiences thickening and dilation of glands, epithelial proliferation, and hyperkeratosis. These changes trigger increased cerumen production along the canal, which then increases local humidity and pH, thus facilitating secondary infections (Bajwa, 2019). The etiology of otitis externa is multifactorial. Primary factors include dermatological disorders such as atopic dermatitis and food allergies, as well as parasitic ear infestations such as the mite Otodectes cynotis., endocrine disorders such as hypothyroidism, and neoplasia or foreign bodies that disrupt the integrity of the canal lining. Predisposing factors, such as a stenotic ear canal, excess hair, high humidity, and improper cleaning, increase the risk of infection (Brame & Cain, 2021). After the initial irritation, perpetuating factors such as bacterial colonization and fungal yeast will exacerbate and prolong the inflammatory process (Borriello et al., 2020; Chan et al., 2019).

In the cat case, otoscopic examination results showed ceruminous and sanguineous exudates caused by bacterial and fungal infections. Based on the results of bacterial and fungal isolation and identification, the dominant growth of *Pseudomonas sp*. (Figures 4A and 5A) as an infectious agent that is often reported to have the ability to form biofilms and antimicrobial resistance, thus slowing the healing process (Barzan & Al-Hadithi, 2023). *Pseudomonas sp*. bacterial colonies growing on MacConkey media are characterized by colorless, smooth, flat surfaces, and a diameter of 2–3 mm (Figure 4A). When Gram staining was performed, the bacteria were pink and rod-shaped (Figure 5A). Furthermore, the growth of *Bacillus sp*. bacteria was observed, characterized by pale white colonies, flat surfaces, irregular borders, and a diameter of 2–5 mm (Figure 4B). When Gram staining was performed, the pink bacteria were in chains (Figure 5B). Although rare, *Bacillus sp*. bacteria have been identified in 17–20% of cases of chronic otitis in cats and can act as co-pathogens in irritated ear canals (Brame & Cain, 2021).

Candida sp. is a normal flora found in the oral cavity, gastrointestinal tract, upper respiratory tract, genitals, and skin (Lopes & Lionakis, 2022). The presence of *Candida sp*. in cases of otitis can occur due to the animal's behavior of frequently scratching, licking, or coming into contact with dirty environments (Boehm et al., 2020). The presence of *Candida sp*. in this case confirms the role of opportunistic fungi as a perpetuating factor, which can cause excessive cerumen exudate and prolong the chronic inflammatory phase. Isolation and culture of fungi on media

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Sabouraud Dextrose Agar (SDA) shows the presence of an oval-shaped structure surrounded by a capsule with a diameter of approximately 3 – 5 µm (Figure 5E), which is in accordance with the morphological characteristics of *Candida sp*. fungus (García et al., 2025). *Candida albicans*is the most common species in humans and animals (Sykes et al., 2023). However, there are not many case studies reporting cases of otitis in animals caused by this fungus (García et al., 2025).

Predisposing factors, such as Persian cats, contribute to chronic otitis media because this breed has a narrower ear canal, which disrupts keratin migration and facilitates exudate accumulation. Unilateral otitis media can occur because excessive cleaning with cotton swabs and alcohol can damage the protective epithelial layer and disrupt the balance of the local microbiota (Brame & Cain, 2021; Houtsaeger et al., 2024). The humid and low-sunlight environment of the cage creates ideal conditions for the growth of opportunistic microbes (Niae et al., 2021).

Treatment of chronic otitis externa in this case begins with ear cleaning. The primary function of cleaning is to dissolve cerumen exudate and thick debris, lower the pH of the ear canal, and provide a mild keratolytic effect to allow subsequent topical medications to work optimally. Acids such as malic, benzoic, and salicylic acids are effective in reducing the number of fungi and opportunistic bacteria in the ear canal by lowering the local pH and improving the local microbiome (Cabrera, 2004; Panzuti et al., 2022). Propylene glycol as a solvent is relatively safe in low concentrations but can be ototoxic if the tympanic membrane is perforated or if high concentrations (≥10%) are used routinely (Harvey & Paterson, 2014). Once the ear is relatively clean, Topigen® drops are applied, a combination of gentamicin sulfate (an antibiotic), nystatin (an antifungal), and fluocinolone acetonide (a corticosteroid).

Gentamicin is an antibiotic from the aminoglycoside group that works by inhibiting bacterial protein synthesis by binding to the 30S ribosome, resulting in a bactericidal effect on Gram-negative and Gram-positive bacteria (Allerton, 2020). Clinical microbiology studies have shown that the resistance rate of *Pseudomonas aeruginosa* to gentamicin is only 10.3%, indicating that approximately 89.9% of *P. aeruginosa* isolates taken from ear infections in cats and dogs are sensitive to gentamicin (de Jong et al., 2020). Another microbiological study reported that 100% of *Bacillus spp*. isolates were still sensitive to gentamicin (Haque et al., 2024). Topical application allows for high drug concentrations in the ear canal without requiring systemic distribution, maximizing local efficacy and minimizing side effects. Successful therapy depends heavily on initial cleaning of the ear canal to allow the drug to reach the affected area (Nuttall, 2023). Gentamicin sulfate is an effective and relatively safe therapeutic option for otitis externa in cats, especially if the tympanic membrane is intact and the application is carried out according to the recommended dosage (Kayastha, 2022; Rybak et al., 2021).

Nystatin is a polyene antimycotic that binds to fungal cell membrane sterols, disrupting cell permeability and causing osmotic destruction. Nystatin is generally used to treat candidiasis (Pavlovna, 2025). There have been no studies discussing the effectiveness of Nystatin in cases of chronic otitis in cats, but in vitro laboratory studies in humans have shown that *Candida sp*. is sensitive to Nystatin, with effectiveness as a topical agent reaching 50–80% (Ahmed et al., 2018). In a study of *Malassezia pachydermatis* isolates from dogs, all isolates, including some strains containing *Candida sp*. samples, were found to be susceptible to Nystatin along with other antifungals (Kashif et al., 2016). Fluocinolone acetonide is a fluorinated synthetic corticosteroid with moderate to high anti-inflammatory potency, commonly used topically in otic formulations to treat inflammation and pruritus in otitis externa in small animals. It is usually combined with the solvent dimethyl sulfoxide (DMSO) to enhance penetration into the ear canal epithelium (Enna & Bylund, 2008; Paterson, 2016). In 21 cases of tympanic

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membrane perforation in otitis externa (PNOE) in cats and kittens, all animals showed a good response to topical and/or systemic therapy with immunomodulators, supporting the role of corticosteroids such as fluocinolone in suppressing hyperproliferative inflammation (Brame, 2025).

In addition to chronic otitis externa, the case cat was also diagnosed with rhinitis and conjunctivitis. Confirmation of the diagnosis was made through the integration of clinical symptoms, physical examination, and confirmation from laboratory tests, such as rapid viral antigen tests and microorganism culture and isolation. Rapid antigen tests for Feline calicivirus and Feline Herpesvirus-1 in the case cat showed negative results, indicating that the cause of the clinical symptoms, such as sneezing, redness of the eye mucosa, and serous discharge from the eyes and nose, was not caused by a viral infection. Furthermore, to confirm the diagnosis, bacterial and fungal isolation and identification were performed. The results of bacterial isolation and identification from nasal and eye samples showed the growth of *Staphylococcus spp.*

Staphylococcus spp. bacteria is gram-positive, spherical, 0.7–1.2 µm in diameter, arranged in irregular clusters resembling grapes (Figure 5C and Figure 5D). *Staphylococcus spp*. is generally classified as opportunistic pathogens (Weese & Duijkeren, 2010). In healthy individuals, these microorganisms generally only act as carriers without causing symptoms. However, serious infections can occur when the immune system is weakened, for example due to hormonal changes, systemic disease, or injury (Ghona Gani et al., 2024). The ability of *Staphylococcus sp*. bacteria to invade the body and cause infection is greatly influenced by various predisposing factors, such as damage to the mucous membranes, viral infections, and disruption of the balance of normal flora. The presence of these factors can transform *Staphylococcus sp*., which is normally part of the normal flora, into a pathogenic organism (Vasconcelos NG & Maria LRSC, 2010). The results of bacterial isolation and identification from nasal and eye swabs showed the proliferation of *Staphylococcus sp*. bacteria in significant numbers in one microscope field of view. These findings support that *Staphylococcus sp*. plays a role as the main etiologic agent in cases of rhinitis and conjunctivitis in cats.

Routine hematology examination of the cat showed that all parameters were within normal limits. Lymphocytosis and mild neutropenia may occur in chronic infectious diseases in cats (Harvey, 2015). Interpretation of a disease diagnosis depends not only on hematological parameters, but must also consider medical history, clinical manifestations, and more specific supporting examinations to obtain a more accurate picture of the patient's condition.

Treatment for rhinitis and conjunctivitis in this case involves causative and symptomatic therapy. Causative therapy involves administering antibiotics amoxicillin-clavulanic acid (ClaPet 250® Veko Care Private Limited, India) and symptomatic therapy in the form of methylprednisolone. Amoxicillin-clavulanate is a broad-spectrum antibiotic used to treat skin and soft tissue infections, urinary tract infections, wounds, and respiratory tract infections in dogs and cats. This combination is effective against both Gram-positive and Gram-negative bacteria, particularly those producing β-lactam that causes resistance to amoxicillin alone (Papich MG, 2016). Clavulanic acid has no direct antibacterial activity, but acts as a β inhibitor-non-competitive lactamase that protects the amoxicillin molecule from enzymatic degradation by bacteria such as Staphylococcus and β-producing enterobacteriaceae-lactamase (Bush & Bradford, 2016). This combination broadens the spectrum of antibiotic activity, including against β-producing *Staphylococcus sp*.-lactamase (as long as it is not resistant to methicillin) and certain Gram-negative bacteria (Evans et al., 2025). Methylprednisolone is a depot formulation of an intermediate-acting corticosteroid that provides a long-lasting anti-inflammatory effect. This medication is often used to manage acute and chronic inflammation

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in the short to medium term (Arinata et al., 2025).

Post-Therapy Observation

The case was evaluated over 14 days. On the seventh day, the patient's left ear showed improvement, with reduced redness and no longer swollen parotid lymph nodes. However, ceruminous exudate was still observed from the ear canal, accompanied by an unpleasant odor, indicating that the inflammatory process had not yet fully resolved. At the same time, systemic therapy using a combination of amoxicillin and clavulanic acid showed quite good results. Systemic clinical symptoms such as sneezing and serous nasal discharge were no longer observed, indicating improvement in the rhinitis. Eye cleansing was also performed routinely using sterile 0.9% NaCl solution twice daily.

On the 7th day after administration of the systemic antibiotic amoxicillin-clavulanic acid, the patient's left eye still showed excessive serous discharge and conjunctival hyperemia, indicating that the conjunctivitis had not fully resolved. On the 7th day, the owner reported that serous exudate in the left eye was still present, although not accompanied by other systemic symptoms. This indicated that the conjunctivitis was persistent and required additional therapeutic approaches. Therefore, on the 8th day, therapy was supplemented with the addition of Erlamycetin Plus® eye ointment (PT. Erela, Semarang) applied topically at a dose of one application every 12 hours for three days.

On the 14th day, the earwax was no longer present (Figure 6), and symptoms such as headshaking or pain when the ear was touched were also not observed, indicating a positive response to otitis externa therapy. Exudate from the left eyelid was seen to be drying (Figure 7). The length of recovery is also thought to be influenced by delayed treatment and inappropriate medication, considering that the owner had previously prescribed ear drops for ear mites. Inappropriate therapy will lead to treatment failure, chronicity, and prolonged recovery time (Rosychuk, 1994). The persistent conjunctivitis was suspected to be due to the case cat's sleeping position. During therapy, the cat was observed sleeping with its left eye always resting on the floor. Exposure to dust, fur, and foreign objects can delay the healing of conjunctivitis due to mechanical irritation and the risk of secondary infection. The case cat was given supplemental food consisting of dry food mixed with commercial wet food. After 14 days of feeding this mixture, the cat's BCS increased to 5/9, characterized by invisible but easily palpable ribs, a distinct waist, minimal abdominal fat, and a slightly raised abdomen (Royal Canin, 2025).

CONCLUSION AND SUGGESTION

Conclusion

Based on the results of anamnesis, physical examination, and laboratory examination, it can be concluded that the cat was diagnosed with chronic otitis externa due to *Pseudomonas sp., Bacillus sp. and Candida sp*. fungi accompanied by rhinitis and conjunctivitis due to *Stapylococcus sp*. bacterial infection. Treatment of chronic otitis externa accompanied by rhinitis and conjunctivitis in Persian cats can be done effectively through a multimodal approach, including ear cleaning, topical application of a combination of gentamicin, nystatin, fluocinolone, and administration of amoxicillin-clavulanic acid antibiotics and systemic corticosteroids methyleneprednisolone, thus accelerating the healing of otitis and rhinitis, although improvement in conjunctivitis requires further therapy.

Suggestion

It is recommended to always undergo a complete examination before therapy, as well as maintain personal and environmental hygiene, including regular grooming, proper ear

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cleaning, and regular veterinary checkups. These measures are essential in preventing recurrence and supporting successful therapy, particularly in cases of otitis externa, rhinitis, and conjunctivitis.

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Table

Table 2. Results of Vital Signs Examination

Parameter	Results	Normal Values	Information
Heart Rate (x/minute)	132	110 - 140	Normal
Pulse (x/minute)	128	110 - 140	Normal
Capillary Refill Time(CRT) (seconds)	< 2	< 2	Normal
Respiratory Rate (x/min)	40	20 - 30	Abnormal
Rectal Temperature(°C)	38.0	37.5 – 39.2	Normal

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Table 1. Physical Examination Results

System	Results
General	Abnormal
Skin and Nails	Normal
Mucosa	Normal
Circulation	Normal
Respiration	Abnormal
Digestion	Normal
Urogenital	Normal
Musculoskeletal	Normal
Nerve	Normal
Lymph nodes	Abnormal
Ear	Abnormal
Eye	Abnormal

Table 3. Hematology Results

Hematology	Results	Reference	Information
WBC	10.3 x 103/µL	5.5 – 19.5	Normal
LYM#	8.36 x 103/µL	0.8 – 7	Increase
MID#	0.76 x 103/µL	0 – 1.9	Normal
GRA#	1.18 x 103/µL	2.1 – 15	Decrease
LYM %	81.2%	12 – 45	Increase
MID%	7.4%	2 – 9	Normal
GRA%	11.4%	35 – 85	Decrease
RBC	7.46 x 106/µL	4.6 – 10	Normal
HGB	11.6 g/dL	9.3 – 15.3	Normal
MCHC	32.9%	30 – 38	Normal
MCH	15.5 g/dL	13 – 21	Normal
MCV	47.2 fL	39 – 52	Normal
RDW-CV	13.8%	14 – 18	Decrease
RDW-SD	30.8 fL	35 – 56	Decrease
HCT	35.2%	28 - 49	Normal
PLT	164 x 103/µL	100 -514	Normal
MPV	8 fL	5 – 11.8	Normal
PDW	11.2 fL	10 - 18	Normal
PCT	0.131%	0.1 – 0.5	Normal
P-LCR	19.1%	13-43	Normal

WBC: White Blood Cell; LYM: Lymphocytes; MID: Middle Cell; GRA: Granulocytes; RBC: Red Blood Cell; HGB: Hemoglobin; MCHC: Mean Corpuscular Hemoglobin Concentration; MCH: Mean Corpuscular Hemoglobin; MCV: Mean Corpuscular Volume; RDW-CV: Red Cell Distribution Width Coefficient of Variation; RDW-SD: Red Cell Distribution Width Standard Deviation; HCT: Hematocrit; PLT: Platelets; MPV: Mean Platelet Volume; PDW: Platelet Distribution Width; PCT: Procalcitonin; P-LCR: Platelet Large Cell Ratio.

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Picture

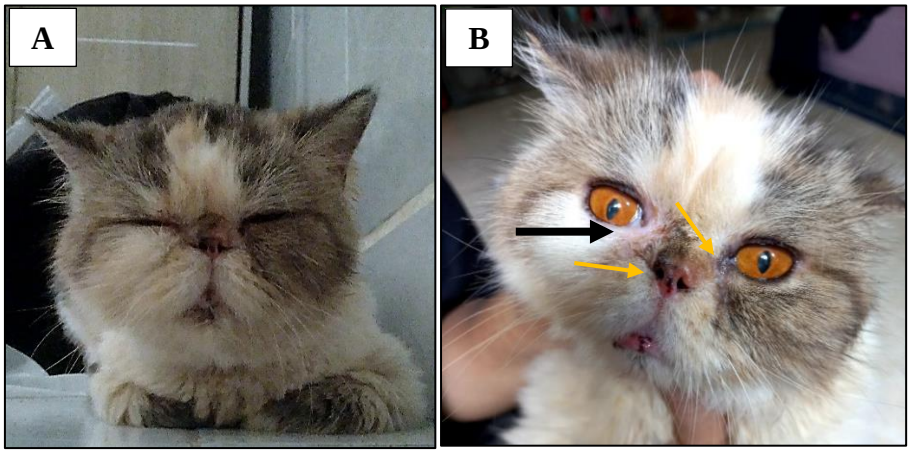

Figure 1. General condition of the patient (A). Redness of the eyes (black arrows) and serous exudate in the eyes and nose (yellow arrows) (B) are visible.

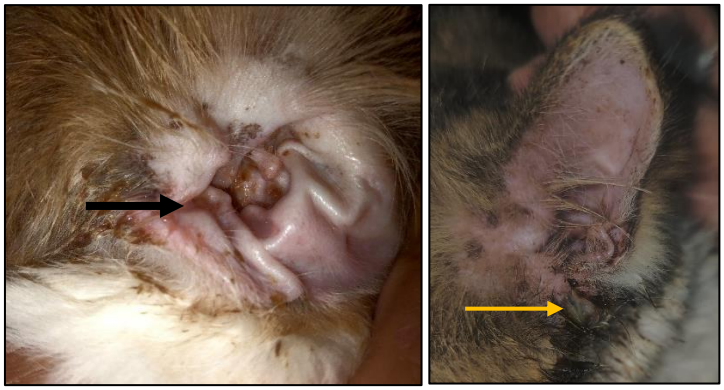

Figure 2. Redness (black arrow) and purulent exudate are seen coming out of the left ear of the case cat (yellow arrow).

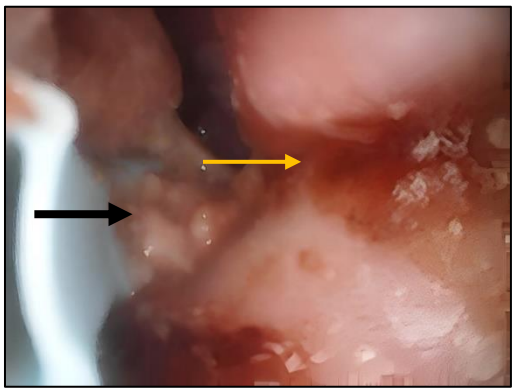

Figure 3. Otoscopy in cats the cat case shows the presence of ceruminous (black arrow) and sanguineous (yellow arrow) exudates in the external acoustic meatus.

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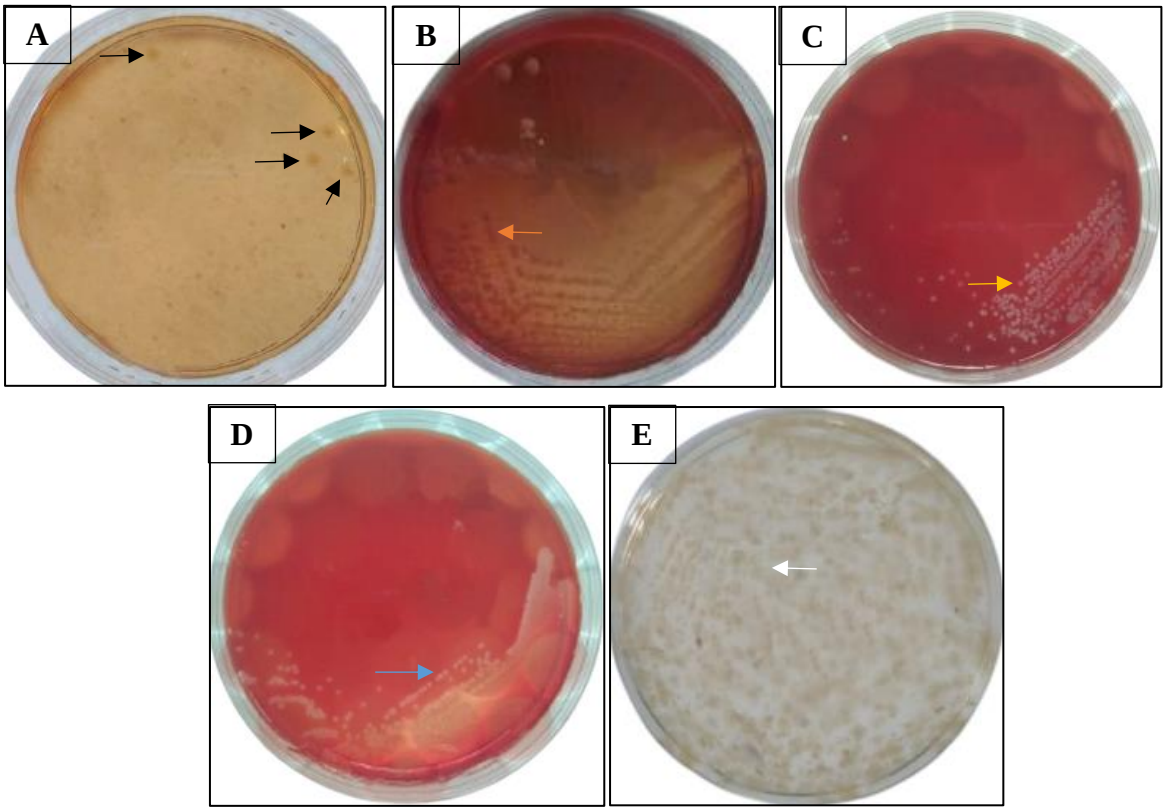

Figure 4. Results of isolation and identification of bacteria and fungi. The growth of *Pseudomonas sp*. bacterial colonies (black arrows) is seen on MacConkey media from ear exudate samples (A). *Bacillus sp*. bacterial colonies (orange arrows) on MacConkey media from ear exudate samples (B). *Staphylococcus sp*. bacterial colonies (yellow arrows) on Blood Agar media from nasal exudate samples (C). *Staphylococcus sp*. bacterial colonies (blue arrows) growing on Blood Agar media from eye exudate samples (D). *Candida sp*. yeast growth (white arrows) on Sabouraud Dextrose Agar from ear samples (E).

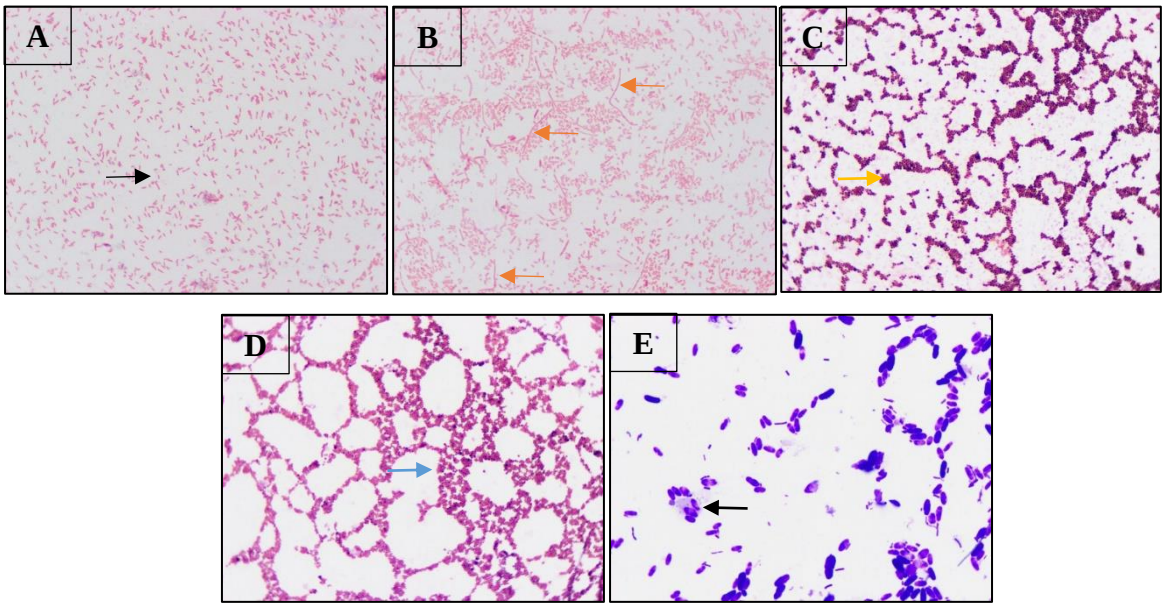

Figure 5. Gram staining results of bacteria and fungi. Growth of *Pseudomonas sp*. bacteria (black arrow) originating from ear exudate (A). Growth of *Bacillus sp*. bacteria (orange

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arrow) originating from ear exudate (B). Growth of *Staphylococcus sp*. bacteria (yellow arrow) originating from nasal exudate (C). Growth of *Staphylococcus sp*. bacteria (blue arrow) originating from eye exudate (D). Growth of *Candida sp*. fungi (black arrow) originating from ear exudate (E).

Figure 6. Post-therapy condition of the cat's ear. The auricular canal appears clean and no accumulation of ceruminous secretions is detected. The skin surface of the ear appears drier and cleaner.

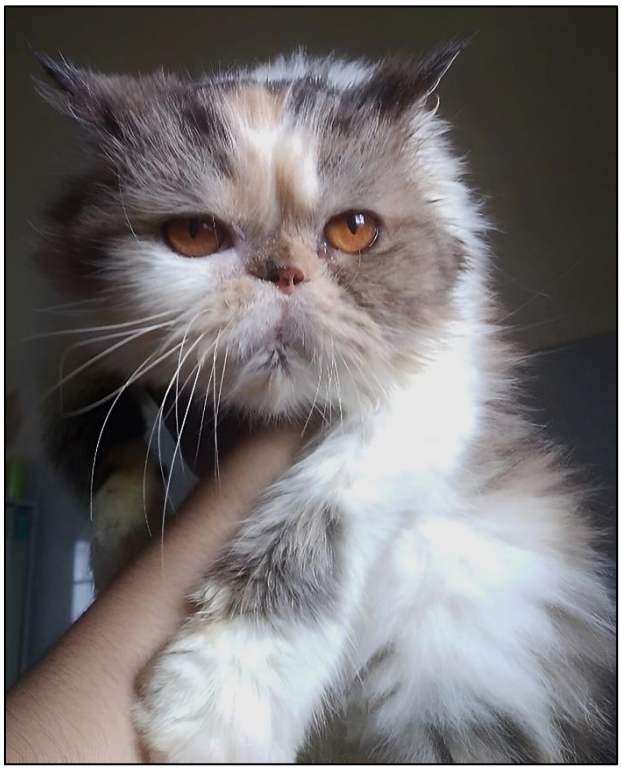

Figure 7. General condition of the cat after therapy showed clinical improvement marked by the absence of redness in the eyes; serous exudate in the eyes and nose appeared minimal.