Open Access

Int. J. Trop. Vet. Biomed. Res.
Vol. 8 (2): 55-59; November 2023

www.jurnal.usk.ac.id/IJTVBR
E-ISSN : 2503-4715

Diagnosis and medical treatment of otitis externa in a ragdoll cat: A case report

Nora Usrina[1], Maulana Habibie[2], Mahdi Abrar[3], Darmawi Darmawi[3], Amiruddin Amiruddin[4] , Baidillah Zulkifli[5,6*], Yenni Yusriani[7]

[1]Laboratory of Parasitology, Faculty of Veterinary Medicine, Universitas Syiah Kuala, Banda Aceh, Indonesia
[2]Faculty of Veterinary Medicine, Universitas Syiah Kuala, Banda Aceh, Indonesia
[3]Laboratory of Microbiology, Faculty of Veterinary Medicine, Universitas Syiah Kuala, Banda Aceh, Indonesia
[4]Laboratory of Clinical and Surgical, Faculty of Veterinary Medicine, Universitas Syiah Kuala, Banda Aceh, Indonesia
[5]Laboratory of Physiology, Faculty of Veterinary Medicine, Universitas Syiah Kuala, Banda Aceh, Indonesia
[6]Center for Tropical Veterinary Studies - One Health Collaboration Center, Universitas Syiah, Banda Aceh, Indonesia
[7]Research Center for Animal Husbandry, Research Organization for Agriculture and Food, National Research, and Innovation Agency of The Republic of Indonesia (BRIN), Cibinong Sciences Center, Bogor, Indonesia
**Corresponding author: baidillahzulkifli@usk.ac.id*

Abstract

Otitis is a disease that is often found due to the cat's ears being unclean and causing earwax to build up along with fluid. Otitis is caused by inflammation of the epithelium of the ear canal and also surrounding structures such as the external auditory meatus and pinna. A 3-month-old Ragdoll cat, male, with white and black hair on the ears, was examined with complaints of head tilting and frequent head shaking, pus in the ears, and inflammation. Clinical examination revealed erythema. The ear wax swab examination results showed an Otodectes cynotis mite infection. The results of the bacterial culture examination showed the presence of Klebsiella sp bacterial infection. The animal was diagnosed with otitis externa. Treatment for otitis externa is given by Dexamethasone, Erlamycetin® (Chloramphenicol 1%), Ivermectin, and lidocaine. The accumulated earwax is also cleaned using a cotton bud and saline. Five days after therapy the cat showed recovery.

Citation: Usrina, N., Habibie, M., Abrar, M., Darmawi, D., Amiruddin, A., Zulkifli, B., Yusriani, Y. (2023). Diagnosis and medical treatment of otitis externa in a ragdoll cat: A case report. *The International Journal of Tropical Veterinary and Biomedical Research*, 8(2), 55-59.

Introduction

Cats are one type of beloved animal that is now kept by many people. In keeping cats, the way they are cared for makes a big contribution to the health of the cat's body. Wrong care can cause cats to develop diseases. Otitis is a disease that is often found due to the cat's ears being unclean and causing earwax to accumulate along with fluid. This is of course related to treatment methods that do not pay attention to aspects of ear hygiene. Otitis is caused by inflammation of the ear canal's epithelium and surrounding structures such as the external auditory meatus and pinna (Triakoso, 2016). Otitis in cats is caused by several factors. A study in England found that 2% to 6.6% of cats were treated in veterinary hospitals due to otitis externa with various causal factors, namely food allergies, parasites, microorganisms in the form of bacteria and fungi, foreign objects, trauma, tumors, and environmental conditions (Foster, 2009), while in a study at the Jakarta Animal Hospital, there were (36.2%) of 276 cats showing cases of otitis externa caused by parasites (Kustiningsih, 2001).

Symptoms of otitis in cats that can be seen are cats frequently scratching their ears, shaking their heads, purulent discharge at the site of infection, and

excoriation. Treatment of otitis requires a thorough inspection of the ear canal and then elimination of factors that cause inflammation in the ear (Muslim & Batan, 2020). The purpose of writing this article is to determine the agents that cause otitis and therapy to eliminate these agents.

Discussion

Case Report

Signalment

A ragdoll cat named Odin, 3 months old, male, has white and black hair on his ears, a body weight of 1.6 kg was examined at the clinic as shown in Figure 1.

Figure 1. Ragdoll cat brought to the clinic

Anamnesis

The animal was examined with complaints of head tilting and frequent head shaking, purulent ears and inflammation. The owner stated that the cat had not been groomed for a long time. The cat has received vaccines and deworming medication. The cat is weak because it has no appetite. The condition of the cat can be observed in figure 2.

Figure 2. Ragdoll cat with purulent and inflamed ears

Clinical Examination

The results of the clinical examination obtained from the Odin case cat can be seen in Table 1 below:

Table 1. Clinical examination results

No	Parameter	Result	Normal Range
1	Pulsus rate (/min)	130	76-180
2	CRT (second)	< 2	< 2
3	Respiration rate (/min)	49	24-42
4	Body temperature (^oC)	39,6	37,0-39,2
5	Mucosal membrane:		
	• Conjungtiva	• Normal	
	• Gingiva	• Normal	
	• Nose	• Normal	
	• Penis	• Normal	
6	Organ System:		
	• Skin and nails	• Erythema	
	• Extremitas	• Normal	
	• Musculoskeletal	• Normal	
	• Nervus	• Normal	
	• Respiratory	• Normal	
	• Sirkulation	• Normal	
	• Digestion	• Normal	
	• Urogenital	• Normal	
	• Limponodus	• Normal	

Diagnostic Support Examination

Supporting examinations are carried out to confirm the diagnosis. The examination consists of a cerumen swab and isolation of ear wax bacterial culture at the Faculty of Veterinary Medicine Laboratory in the Universitas Syiah Kuala.

Ear Cerumen Swab Examination

Microscopic examination is carried out using a swab from the inside of the ear. This examination method is carried out by applying a cotton bud containing the patient's ear wax to an object glass, then dripping it with 10% KOH and covering it with a cover glass, then examining it under a microscope with 40x magnification. The results of examination under a microscope found the ectoparasite *Otodectes cynotis*. Based on these morphological characteristics, the infecting mites are mites from the *Otodectes cynotis* species. This is in accordance with the opinion of (Bowman et al., 2002), who stated that when examining the distal extremities of *Otodectes cynotis* mites, wine-glass shaped carunculae will be visible on the pedicels of the extremities. Male *Otodectes* have carunculae on all four pairs of legs, while female *Otodectes* have the third and fourth pairs of legs ending in long hairs or satae, the fourth pair of legs seems to disappear (rudimentary). The inspection results are displayed in Figure 3.

Figure 3. Microscopic view of *Otodectes cynotis* (ear mites). 40x magnification

Bacterial Culture Examination

The bacterial culture examination method is carried out by culturing bacteria taken from ear wax swabs on NA media and then incubating them, then the results of separate bacterial cultures on NA media are planted on Mac Conkey selective media. The results obtained are bacterial cultures that macroscopically appear circular in shape with a slightly convex surface as indicated by the red arrows in Figures 4a and 4b. This is in accordance with what was stated by (Darna et al., 2018), that colonies of *Klebsiella sp* bacteria are round, small in size, red in color, have a convex surface with flat edges that grow on MacConkey media. *Klebsiella sp* grown on MacConkey agar, the colonies will be pink (Roy et al., 2011). Meanwhile, the microscopic morphology obtained from Gram staining is Gram negative bacteria which are red in color and have the shape of short rods as shown in Figure 4c.

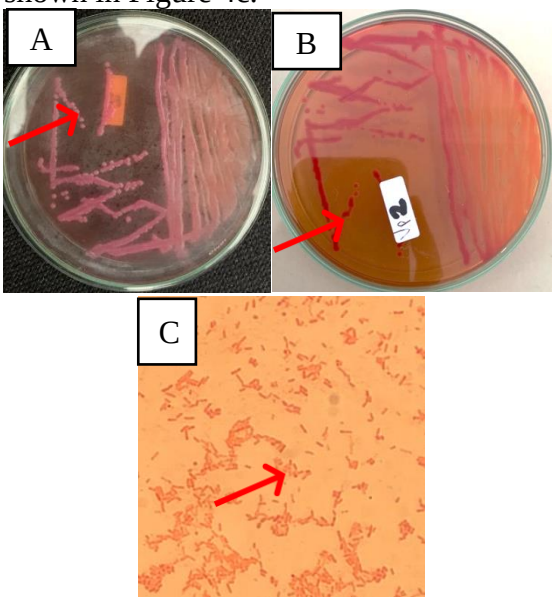

Figure 4. A and B). Bacterial culture on MacConkey; C). Bacterial culture on gram stain (1000x magnification)

Diagnosis and Prognosis

Based on the results of clinical and supporting examinations, it can be concluded that the patient experienced otitis externa due to the mite agent *Otodectes cynotis* and the bacterial agent *Klebsiella sp*. The prognosis of this disease is good

because the agent can be eliminated with appropriate therapy.

Treatment

Treatment for otitis is by administering antibiotics, antiparasitics and anti-inflammatories. The anti-inflammatory given was Dexamethasone 0.50 mg/kg BW intramuscularly, then ear drops were given a combination of antibiotics, antiparasitics and local anesthetic, namely Erlamycetin® (Chloramphenicol 1%) 10 ml, Ivermectin 0.3 ml and lidocaine 1 ml. Apart from that, the accumulated earwax is cleaned using a cotton bud and saline.

Discussion

Otitis externa is inflammation that occurs in the outer ear canal, including the anatomical structure of the pinna, vertical and horizontal canals and the external part of the tympanic membrane wall. Some suggest the incidence of otitis externa ranges from 2-6% of the cat population. Otitis externa can be caused by several causes, namely 59.21% by ear mites, 31.58% idiopathic (unknown), 3.95% fungal infections, 3.95% bacterial infections, 1.32% (Triakoso, 2016).

O. cynotis infection is the most common cause or accounts for 50-84% of otitis externa in cats. *Otodectes cynotis* is a mite that lives in the epidermis of the external ear canal. O. cynotis mites can infest cats, dogs and other carnivores such as ferrets and foxes (Bowman et al., 2002). Cats with *O. cynotis* infection show symptoms of an itchy sensation, erythema in the ear canal, sores inside the ear (painful if touched), brownish ceruminous exudate coming out of the ear but these symptoms may not be visible in some cats, on the contrary the symptom that often appears is the cat shaking head (Roy et al., 2011; Wiwanitkit, 2012). The *O. cynotis* mite has a size of 500-800 μm and its life cycle lasts 18-21 days (Siagian & Fikri, 2019). *O. cynotis* lives in epidermal debris and dander that collects in the pinnae of infected animals. *O. cynotis* feeds on epidermal tissue and tissue fluid from the superficial layers of the epidermis (Roy et al., 2011; Miller et al., 2013).

Apart from being infected by parasitic agents, cats are also infected with the bacterial agent *Klesbsiella sp*. [4] have identified secondary infections by *Staphylococcus spp.* and *Klebsiella spp*. on the incidence of otitis externa in cats. According Roy et al., 2011, *Staphylococcus sp* is the bacteria most frequently isolated from cat ears along with *O. cynotis* infections (30/48) while *Klebsiella* bacteria (1/48). The normal bacterial flora in the ear mostly consists of Gram-positive bacteria and fungi, while Gram-negative bacteria are rarely identified (Tater et al., 2003).

Treatment for otitis externa is by cleaning the dirty ear canal using saline fluid. Cleaning and drying the ear canal is an important part of treatment. Cleaning produces optimal hearing, removes debris, reduces microbial populations, removes microbial products such as toxins and enzymes, can allow topical medications to reach the site of action, and increases the effectiveness of treatment (Jacobson et al., 2002).

Use a combination of Erlamycetin ear drops (chloramphenicol 1%) 10 ml, Ivermectin 1 ml and Lidocaine 1 ml. Chloramphenicol is a broad-spectrum antibiotic that can fight aerobic and anaerobic gram-positive and gram-negative bacteria. The mechanism of action of chloramphenicol is to inhibit peptidyl transferase in the elongation phase, thereby damaging the protein synthesis process in microorganisms (Sjahrurachman, 2011). The use of Ivermectin as an antiparasitic has been reported to provide satisfactory results in up to 70% of otitis cases caused by *O. cynotis*. Ivermectin works by releasing potential and effects on Gamma Aminobutyric Acid (GABA), a peripheral neurotransmitter in parasites. In treating mites, ivermectin apparently cannot kill the eggs, so it must be repeated at the correct interval and dose. The recommended therapy interval is 7-14 days until the animal is declared cured of ectoparasites (Karakurum et al., 2007)

Hamed et al., 2015, stated that the use of ivermectin is popular with clients because of its price and the frequency of administration once a week. However, the

side effect of Ivermectin injection is causing pain at the injection site, and it has been reported that other safer drug options are available and the use of ivermectin for the treatment of Otodectes infestation is an option if therapy with other drugs fails. Lidocaine is used as a local anesthetic because the pain is caused by the activity of ivermectin.

Conclusion

Based on the history, clinical and supporting examination, it can be concluded that Odin's cat has an otitis externa infection. Treatment carried out in cases is cleaning the ears, giving anti-inflammatory drugs, ear drops a combination of erlamycetin® (Chloramphenicol 1%), Ivermectin 0.3 ml, and lidocaine 1 ml. Five days after therapy the cat showed recovery.

References

Triakoso, N. (2016) *Textbook of Dog and Cat Veterinary Internal Medicine* (Surabaya: Airlangga University Press)

Foster, R.M.S. (2009) Milbemycin approved for treatment of ear mites in cats.

Kustiningsih, H. (2001) *Case Study of the Effects of Otodectes Cynotis on Cats at the Jakarta Animal Hospital* (Bogor).

Maslim, A. & Batan, I. (2020). Bilateral otitis external due to mixed infection of Otodectes cynotis with *Staphylococcus spp.* and Klebsiella spp in exotic shorthair cats *J. Ilm. Mhs. Vet*, 5, 74–84.

Bowman D, Hendrix C, Lindsay D & Stephen, C. (2002). *Feline Clinical Parasitology lowa* (Iowa State University Press).

Darna, D., Masnur, T., & Rahmawati. A. (2018). Identification of enterobacteriacea bacteria in the traditional Soto Pangkong meal *J. Labora Med*, 2, 6–12.

Roy, J., Moreau, C., & Bedard, M. (2011). Treatment of feline otitis externa due to Otodectes cynotis and complicated by secondary bacterial and fungal infections with Oridermyl auricular ointment *CVJ*, 2, 277–287.

Wiwanitkit, V. (2012). Dog earmite infestation: a possible problem in public health system *Iran J*, 5, 1-7.

Siagian T & Fikri F. (2019). Ectoparasite infestation in cats at a veterinary clinic in Bogor Regency *Prosiding Seminar Nasional Teknologi Terapan Inovasi dan Rekayasa (SNT2R)* (Kendari) pp 480–4.

Miller, W.H., Griffin, C.E. & Campbell, K. (2013). *Parasitic Skin Disease. Mullerand Kirk's Small Animal Dermatology* (St. Louis, MO: Elsevier Mosby)

Tater, K., Scott, D., Miller, W. and Erb, H. (2003) The cytology of the external ear canal in the normal dog and cat *J. Vet. Med*, 50, 370-374.

Jacobson, L. (2002). Diagnosis and medical treatment of otitis externa in the dog and cat *J. S. Afr. Vet. Assoc*, 73, 162–70

Sjahrurachman, A. (2011). Genetic Ways to Determine the Susceptibility of Bacteria to Antibiotics (Jakarta: Fakultas Kedokteran Universitas Indonesia) pp 498–502.

Karakurum, M., Ural, K., Cingi, C., Guzel, M., Haydardedeoglu, A., & Borku, M. (2007). Evaluation of ivermectin tablets in the treatment of generalized canine demodicosis *Rev. Médecine Vétérinaire* 158, 380–383.

Hamed, M., Sayed, R., & Waly, N. (2015) Evaluation of the clinical efficacy of three medications used for treatment of earmite-induced otitis externa in cats: a preliminary study *Assiut Vet Med J*, 61 1-9.