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Molecular diagnosis and successful doxycycline therapy of *Mycoplasma felis* infection in a domestic short hair cat

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ABSTRACT: Feline upper respiratory tract infections (URTIs) are among the most prevalent illnesses in domestic cats, often presenting with overlapping clinical signs regardless of the causative pathogen. Accurate identification of the etiological agent is essential for targeted therapy and improved clinical outcomes. This case report aims to describe the clinical presentation, diagnosis, and successful treatment of a domestic short hair cat with respiratory infection caused solely by *Mycoplasma felis*. A 10-month-old female domestic short hair cat from Sidoarjo, East Java, Indonesia, presented with a one-week history of sneezing and purulent nasal discharge. Physical examination revealed conjunctivitis and fever (39.8 °C). Polymerase chain reaction (PCR) assays targeting common feline respiratory pathogens—Feline herpesvirus-1, Feline calicivirus, *Chlamydia felis*, and *Mycoplasma felis (M. felis)*—were conducted using nasal swabs. PCR analysis yielded a positive result only for *M. felis*. Hematological analysis revealed leukocytosis and marked neutrophilia, supporting the presence of bacterial infection. The cat was treated with oral doxycycline at 10 mg/kg once daily for 42 days. Clinical signs resolved progressively, and post-treatment PCR confirmed the absence of *M. felis*. This case highlights the importance of molecular diagnostics in feline respiratory infections and demonstrates the effectiveness of doxycycline as a first-line treatment for *M. felis*-associated URTI.

Keywords:
Mycoplasma felis, feline upper respiratory tract infection, doxycycline, PCR, domestic short hair cat

■ INTRODUCTION

Feline upper respiratory tract infections (URTIs) commonly present with symptoms such as sneezing, nasal discharge, conjunctivitis, and fever. Several pathogens cause URTIs, including Feline Herpesvirus type-1 (FHV-1), Feline Calicivirus (FCV), *Chlamydia felis*, and *Mycoplasma felis* (Lappin *et al*. 2017; Hartmann *et al.* 2008). *Mycoplasma felis* (*M. felis*), a cell wall-deficient bacterium, is a significant respiratory pathogen associated with conjunctivitis and purulent nasal discharge (Schulz *et al.* 2014).

Reports on the clinical occurrence of *M. felis* infection in Indonesia are scarce. Diagnosis requires molecular testing, particularly polymerase chain reaction (PCR), owing to the challenging nature of Mycoplasma spp. culture (Rampazzo *et al*. 2003). This case report describes the clinical presentation, diagnostics, hematological findings, and treatment of a domestic short-hair (DSH) cat with *M. felis* infection in Sidoarjo, East Java, Indonesia, contributing to the documentation of feline respiratory Mycoplasmosis in Indonesia.

■ CASE

Anamnesis and Signalment: A ten month old female domastic short-haired cat presented with sneezing for one week. The cat lived semi-indoors and showed a good appeal. **Physical Examination**: Physical examination results showed sneezing, purulent nasal discharges, fever (39.8 °C rectal temperature), no fleas, and conjunctivitis (Figure 1). **Diagnosis**: Diagnostic test techniques to evaluate for the presence of Feline Herpes Virus, *Chlamydia felis*, Feline calicivirus, and *Mycoplasma felis* using polymerase chain reaction (PCR).

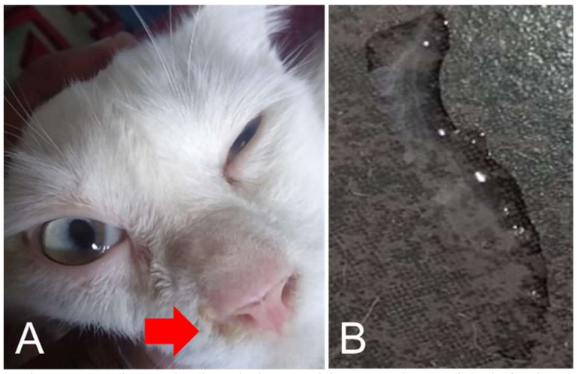

Figure 1. A domestic short hair cat with *Mycoplasma felis* infection. (A) conjunctivitis and nasal discharge purulent (red arrow) and (B) nasal discharge on the floor.

■ RESULTS AND DISCUSSION

Feline upper respiratory tract infections (URTIs) are common in domestic cats, particularly in high-density environments or those with inadequate vaccination. Clinical signs,

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Table 1. Blood hematology test of a domestic short hair cat with *Mycoplasma felis* infection

Parameter	Results	Reference
White Blood Cell/WBC (10^9/L)	**33.98**	3.50-20.70
Lymphocyte/LYM (10^9/L)	2.66	0.83-9.10
Monocyte/MON (10^9/L)	0.21	0.09-1.21
Neutrophil/NEU (10^9/L)	**30.92**	1.63-13.37
Eosinophil/EOS (10^9/L)	0.1	0.01-0.49
Basophil/BAS (10^9/L)	0.01	0-0.2
Lymphocyte/LYM (%)	7.8	
Monocyte/MON (%)	0.6	
Neutrophil/NEU (%)	91	
Eosinophil/EOS (%)	0.5	-
Basophil/BAS (%)	0.0	+/-
Red Blood Cell/RBC (10^{12}/L)	10.53	7.70-12.80
Hemoglobin/HGB (g/dL)	16.7	10-17
Hematocrit/HCT (%)	51.57	33.70-55.40
MCV (fl)	49	35-52
MCH (pg)	15.9	10-16.9
MCHC (g/dL)	32.4	27-35
RDWc (%)	20.9	18.3-24.1
RDWs (fl)	38.3	
Platelet/PLT (10^9/L)	321	125-618
Mean Platelet Volume/MPV (fl)	14.3	8.6-14.9
Procalcitonin/PCT (%)	0.46	
PDwc (%)	34.1	
PDws (fl)	19.0	

Note: MCV= Mean Corpuscular Volume; MCH= Mean Corpuscular Hemoglobin; MCHC= Mean Corpuscular Hemoglobin Concentration; RDWc= Red Blood Cell Distribution Width-deviation; RDWs= Red Blood Cell Distribution Width-size; PDwc= Platelet Distribution Width-deviation; PDws= Platelet Distribution Width-size

including sneezing, nasal discharge, conjunctivitis, and fever, may be caused by various pathogens, including viruses (FHV-1, FCV) and bacteria (*C. felis, M. felis*) (Lappin *et al.* 2017). The cat showed typical signs of URTI, with sneezing, purulent nasal discharge, and conjunctivitis. PCR testing revealed a positive result for *M. felis* as the primary etiological agent, consistent with previous studies on *M. felis* in feline conjunctivitis and rhinitis (Schulz *et al.* 2014; Hartmann *et al*. 2008).

Hematological results showed leukocytosis and marked neutrophilia (Table 1), indicating bacterial infection and a systemic inflammatory response, which is common in cats with bacterial respiratory infections (Geiger 2020). Treatment with doxycycline at 10 mg/kg once daily for 42 days proved effective, following published guidelines (Hartmann *et al.* 2008). The clinical signs resolved completely, with a subsequent negative PCR test. This case demonstrates the value of molecular diagnostics in managing feline URTIs and the effectiveness of targeted antimicrobial therapy based on pathogen identification (Figure 2).

■ CONCLUSION

This case report confirms Mycoplasma felis as a causative agent of respiratory infection in a domestic cat. Diagnosis was established through PCR and supported by clinical signs. The cat recovered after doxycycline therapy, with resolved symptoms and negative PCR results, demonstrating the effectiveness of molecular diagnostics and treatment.

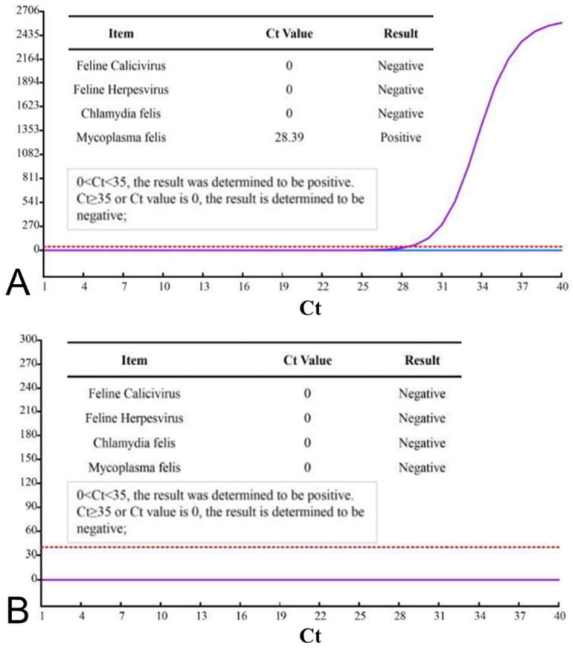

Figure 2. PCR feline upper respiratory test results of a domestic short hair cat with *Mycoplasma felis* infection. (A) before and (B) after treatment with doxycycline.

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