



International Journal of Veterinary Sciences and Animal Husbandry



ISSN: 2456-2912

NAAS Rating (2025): 4.61

VET 2025; 10(11): 42-45

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www.veterinarypaper.com

Received: 10-08-2025

Accepted: 15-09-2025

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Common feline diseases: Retrospective case study and a comprehensive review of diagnostic findings

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DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i11Sa.2718>

Abstract

This article provides a comprehensive overview of various diseases affecting felines, focusing on their diagnostic characteristics through microscopic examination of blood, urine, cytology, and skin scrapings. Hemoprotzoal diseases, including *Cytauxzoon felis*, *Mycoplasma haemofelis*, and *Anaplasma platys*, are discussed with emphasis on their distinct morphological features in blood smears. Urinalysis findings are presented, highlighting the presence of various crystals such as struvite, which can indicate underlying urinary tract issues. Cytological interpretations encompass conditions like eosinophilic granuloma, sporotrichosis, cryptococcosis, showcasing the diagnostic utility of cellular examination. Furthermore, common fungal and ectoparasitic infestations, such as those caused by *Otodectes felis*, *Psoroptes spp.*, *Microsporum spp.*, and *Trichophyton spp.*, are illustrated through skin scraping and fungal examination findings. This review aims to serve as a valuable resource for veterinary professionals in the accurate diagnosis and management of these diverse feline conditions, emphasizing the importance of comprehensive laboratory investigations for optimal patient care.

Keywords: Carcass characteristics, weaner pigs, meat quality, palm kernel cake

1. Introduction

Feline medicine and husbandry demand a thorough understanding of the myriad diseases that can affect domestic cats. Early and accurate diagnosis is paramount for effective treatment and improved patient outcomes. Veterinary diagnostics heavily rely on microscopic examination of various biological samples, offering direct visualization of pathogens, cellular abnormalities, and crystalline structures. This article presents a review of common and significant feline diseases encountered in a diagnostic setting, focusing on the microscopic findings from blood, urine, cytology, and skin scrapings. The aim is to provide a practical guide to the identification of key diagnostic indicators for a range of conditions, from infectious agents to neoplastic processes, thereby aiding veterinary practitioners in their daily diagnostic endeavors.

Materials and Methods

This review is based on a compilation of diagnostic images and case studies from a veterinary diagnostic laboratory. Blood smears were prepared from EDTA-anticoagulated blood and stained with Romanowsky-type stains for the identification of hemoprotzoa and other blood-borne pathogens. Urine samples were analyzed by standard dipstick methods, and microscopic examination of sediment was performed after centrifugation to identify crystals, cells, and other formed elements. Cytological samples, including fine needle aspirates and impression smears, were stained with Diff-Quik or similar Romanowsky stains for cellular evaluation. Skin scrapings, prepared with mineral oil, were examined directly under a microscope for ectoparasites. Fungal cultures were performed on hair and skin samples, and microscopic examination of fungal elements was conducted from positive cultures. All microscopic examinations were performed by adhering to established laboratory protocols.

Review of Literature

Hemoprotzoal infections in felines represent a significant concern globally. *Cytauxzoon felis*, a tick-borne apicomplexan parasite, causes cytauxzoonosis, a rapidly progressive and often

fatal disease characterized by intraerythrocytic piroplasms and schizonts in various tissues (Birkenheuer *et al.*, 2003) [2]. *Mycoplasma haemofelis* (formerly *Haemobartonella felis*) is a common cause of feline infectious anemia, appearing as small epicellular cocci or rods on erythrocytes (Foley *et al.*, 1998) [5]. *Anaplasma platys*, a rickettsial organism, infects platelets and can lead to cyclic thrombocytopenia in infected cats (Alleman *et al.*, 2000) [1].

Urinary tract diseases are frequently diagnosed in felines. Urolithiasis, particularly struvite (magnesium ammonium phosphate) crystals, is a common finding, often associated with sterile or bacterial cystitis and feline lower urinary tract disease (FLUTD) (Osborne *et al.*, 1999) [9]. Other crystals like calcium oxalate can also be observed.

Cytological examination is a powerful tool for diagnosing inflammatory and neoplastic conditions. Eosinophilic granuloma complex, an immune-mediated skin condition, is characterized by a prominent eosinophilic inflammatory infiltrate on cytology (Scott *et al.*, 2001) [10]. Sporotrichosis, caused by *Sporothrix schenckii*, is a zoonotic fungal infection often presenting with skin lesions and cigar-shaped yeasts in macrophages (Kaufman *et al.*, 2007) [6].

Cryptococcosis, caused by the encapsulated yeast *Cryptococcus neoformans* or *Cryptococcus gattii*, is a systemic fungal disease that often manifests with respiratory and neurological signs. Cytological preparations from affected tissues, such as lymph nodes or nasal discharge, can reveal the characteristic encapsulated yeast cells (Sykes *et al.*, 2011) [4]. "Neoplastic diseases are a leading cause of mortality in older cats. Mast cell tumors are common cutaneous neoplasms, characterized by round cells with metachromatic

granules (Kiupel *et al.*, 2005) [7].

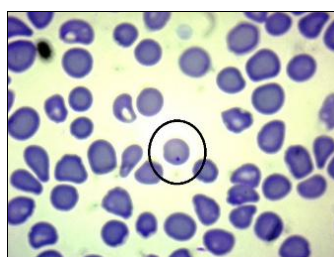
Dermatological conditions, including ectoparasitic and fungal infections, are also frequently encountered. *Otodectes felis* (ear mites) and *Psoroptes spp.* (scabies mites) are common causes of otitis externa and pruritic dermatitis, respectively, identifiable on skin scrapings (Dubin *et al.*, 2008). Dermatophytosis, primarily caused by *Microsporum canis* and *Trichophyton mentagrophytes*, presents with characteristic fungal elements in hair shafts and skin scales (Moriello *et al.*, 2000) [8].

Results and Discussion

Microscopic examination provided clear diagnostic insights across various feline conditions.

Hemoprotzoal Diseases

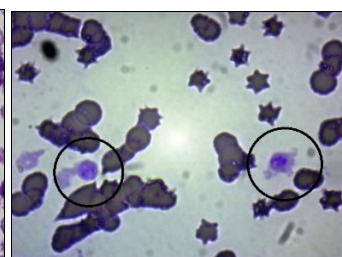
- **Cytauxzoon felis:** * Blood smear examination revealed intraerythrocytic merozoites of *Cytauxzoon felis*, appearing as small, pleomorphic rings or anaplasmod forms. In some severe cases, schizonts were observed within macrophages or endothelial cells in tissue aspirates. This finding confirms the presence of this highly pathogenic parasite.
- **Mycoplasma haemofelis:** * Blood smears showed numerous small, dark-staining cocci or rods adhering to the surface of feline erythrocytes, consistent with *Mycoplasma haemofelis*.
- **Anaplasma platys:** * Intraplatelet morulae of *Anaplasma platys* were identified within the cytoplasm of feline platelets.



Cytauxzoon felis



Mycoplasma haemofelis



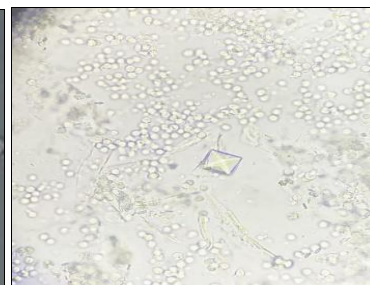
Anaplasma platys

Urine Analysis

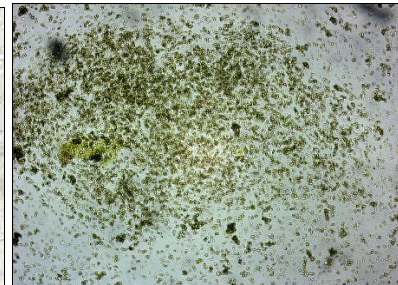
- **Struvite Crystals:** * Urine sediment examination frequently revealed characteristic coffin-lid shaped struvite crystals, often indicative of an alkaline urine pH



Struvite Crystals



Calcium oxalate dihydrate



Amorphous crystals

and potential for urolithiasis or FLUTD.

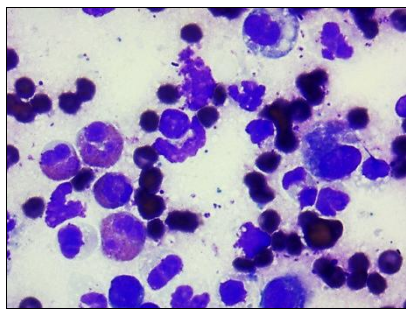
- **Other Crystals:** * Other crystalline forms such as calcium oxalate dihydrate (envelopes) and amorphous crystals were also observed in various cases.

Cytology

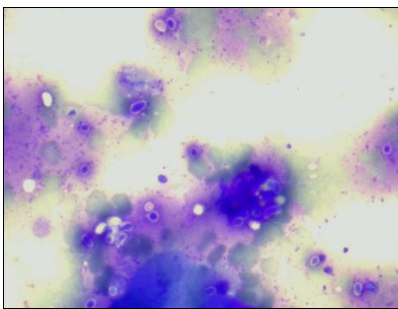
- **Eosinophilic Granuloma:** * Cytological preparations from skin lesions showed a predominance of eosinophils, often with scattered mast cells and macrophages, consistent with eosinophilic granuloma complex.
- **Sporotrichosis:** * Aspirates from cutaneous nodules revealed numerous cigar-shaped, budding yeast cells of

Sporothrix schenckii, often within the cytoplasm of macrophages.

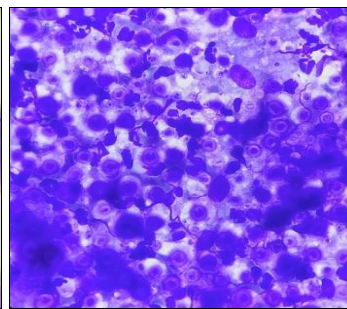
- **Cryptococcosis:** * Cytological examination of fine-needle aspirates from affected lymph nodes or masses, or from nasal discharge, revealed round to oval, budding yeast cells of *Cryptococcus spp.* with a characteristic thick, unstained capsule."



Eosinophilic Granuloma



Sporotrichosis

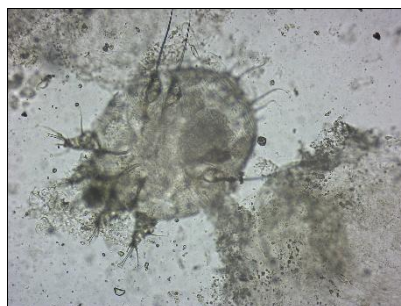


Cryptococcosis

Fungal and Skin Scraping Examination

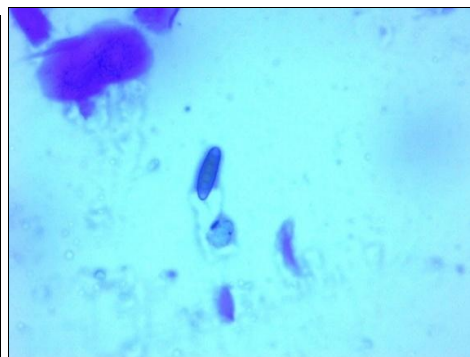
- **Otodectes felis:** * Ear mite infestations were confirmed by the presence of numerous *Otodectes felis* mites, their eggs, and fecal debris in ceruminous otic discharge.

- **Psoroptes spp.:** * Deep skin scrapings from pruritic lesions revealed characteristic *Psoroptes spp.* mites, identifiable by their long, jointed pedicels with cup-shaped suckers.

*Psoroptes spp.*

- **Microsporum spp. and Trichophyton spp. (Dermatophytes):** * Hair plucks and skin scrapings demonstrated characteristic fungal elements, including

ectothrix spores on hair shafts and hyphal fragments, consistent with dermatophytosis. Fungal cultures subsequently confirmed the species.

*Microsporum spp**Trichophyton spp.*

These findings underscore the critical role of microscopic evaluation in the accurate diagnosis of a wide array of feline diseases. The ability to directly visualize pathogens, abnormal cells, or crystalline structures allows for a definitive diagnosis, guiding appropriate therapeutic interventions. Regular training and quality control in diagnostic laboratories are essential to maintain the accuracy and reliability of these findings, ultimately benefiting feline health and welfare.

Acknowledgment

We thank the Karnataka Veterinary Animal and fisheries sciences University, Bidar, Karnataka, India. Further, we thank all the teaching, student and non-teaching faculty of Department of Veterinary Pathology of Veterinary College, Bengaluru, Karnataka, India and Vetlesions veterinary diagnostic laboratory who helped us during our work.

Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Kumar AKR, Devaraj CK, Tajunnisa M, Raghavendra SV. Common feline diseases: Retrospective case study and a comprehensive review of diagnostic findings. International Journal of Veterinary Sciences and Animal Husbandry. 2025; 10(11): 42-45.

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