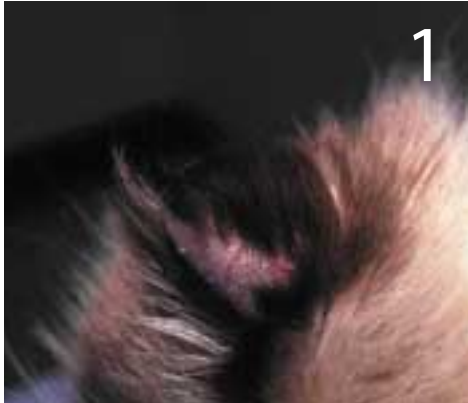


FELINE HAIR LOSS

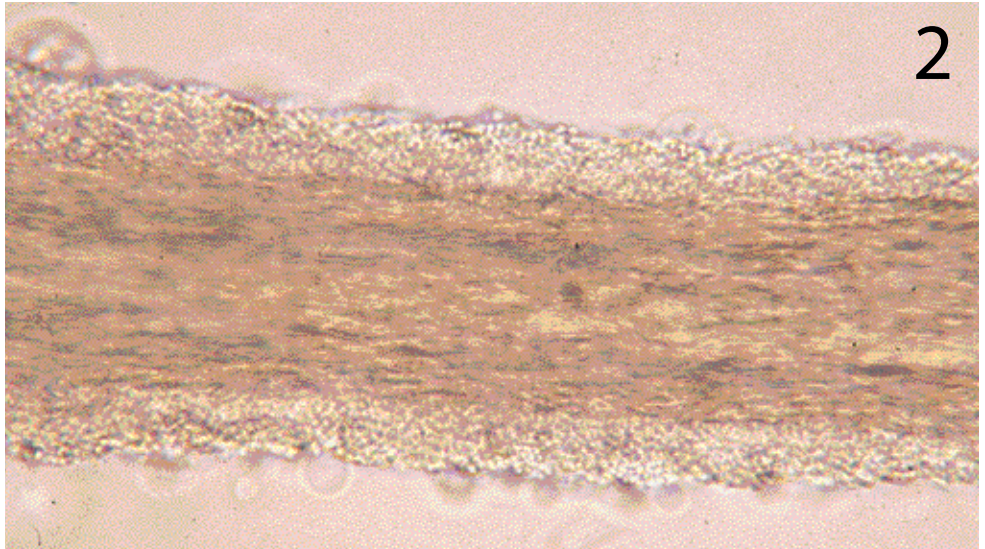
Karen A. Moriello, DVM, University of Wisconsin

A recently adopted, long-haired, 2-year-old male neutered cat is presented for unilateral hair loss on the margin of the left pinna.

History. Other than this recent problem, the cat has been healthy. The hair loss on the margin of the left pinna of the ear (*Figure 1*) has been present for the past 6 weeks. The owner noticed the cat scratching at its ears a few days ago. The cat does not go outside but does have access to a screened, three-season porch. There are no other pets in the household, and the owner has no skin lesions.



Cat's ear



Hair shaft

Physical Examination. Patchy hair loss is present on the margin of the left pinna. Careful examination of the ear reveals that the hair loss is spreading to the caudal aspect of the pinna.

Laboratory Work

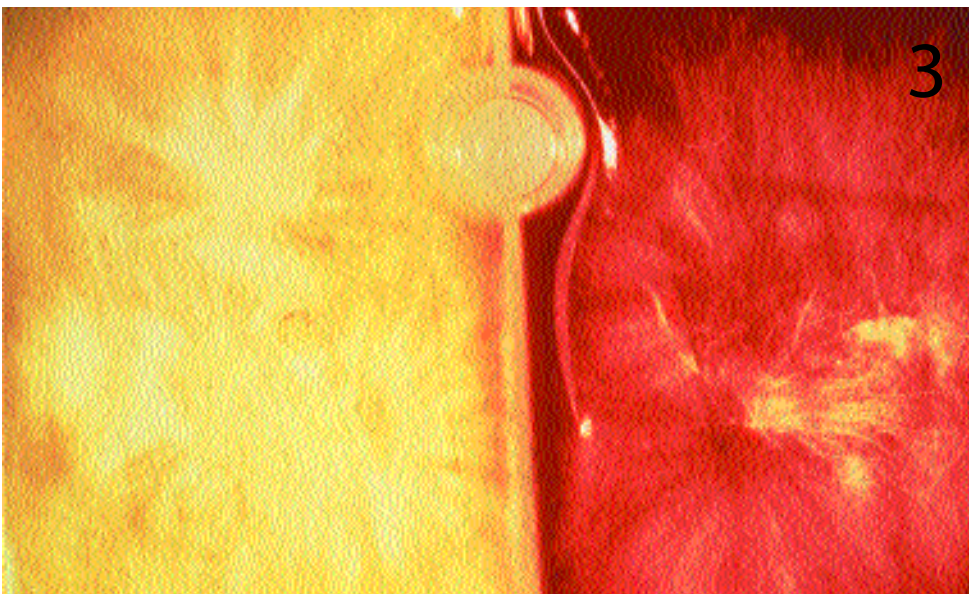
Skin scrapings/mineral oil examination of hair shafts: negative for mites; note hair in Figure 2

Flea combings: negative for ectoparasites

Wood's lamp examination: negative for fluorescence

Ear swab cytology: normal; no organisms seen

14-day-old fungal culture plate; a dual plate with dermatophyte test medium (DTM) culture and plain Sabaroud's dextrose agar: toothbrush fungal culture from ear pinnae (Figure 3)

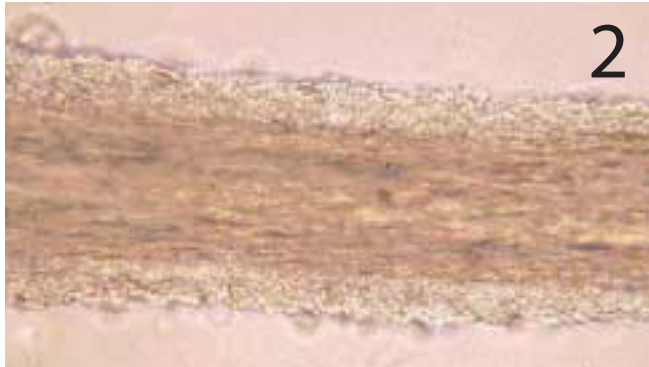


DTM fungal culture plate

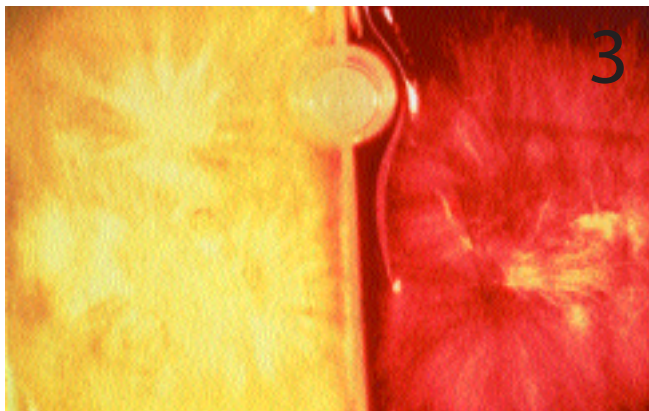
ASK YOURSELF ...

- Is the fungal culture plate by itself diagnostic?
- Is the direct examination of the hair shaft by itself diagnostic?
- Does the negative Wood's lamp examination confound the diagnosis?

make your diagnosis . then turn the page



Hair shaft



DTM fungal culture plate

Diagnosis. *Microsporium canis* dermatophytosis. The gross colony morphology on the DTM plate is compatible with *M. canis*—the most common cause of dermatophytosis in cats. *M. canis* colonies produce a yellow color change on the fungal culture. This is visible if you turn the culture plate over and look at the bottom. This is commonly referred to as a “reverse yellow color.” The gross colony morphology is pale white. The red color change on the Sabouraud’s dextrose agar and DTM is suggestive of a dermatophyte but is not diagnostic. Many species of contaminants can mimic dermatophytes both in gross morphology and by causing a red color change on the DTM. Definitive diagnosis requires microscopic examination of the fungal culture colonies, which is done using lactophenol

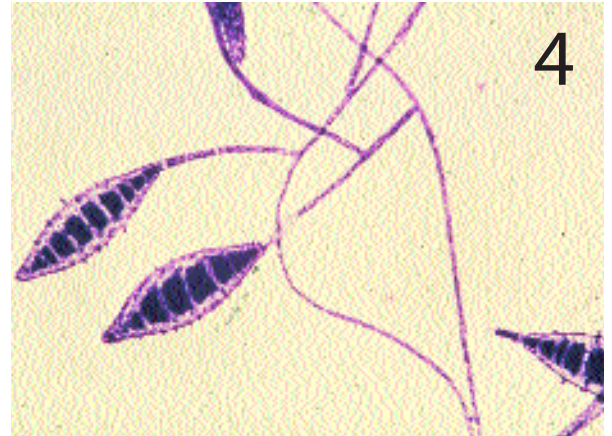
cotton blue stain. Positive identification of *M. canis* is made by finding spindle-shaped bodies of *M. canis* macroconidia with thick walls comprising many cells (Figure 4). Finding hyphae and/or ectothrix spores on hair shafts is diagnostic of dermatophyte infection. In this case, the toothbrush fungal culture technique was used to obtain a haircoat sample. Although the *visible* lesions were localized to the ears, it is important to note that the infection is generalized; thus, the cat requires systemic antifungal treatment and ideally concurrent topical antifungal therapy.

“Clearing agents,” such as potassium hydroxide or chlorphenolac (a

custom compound clearing agent), can be used to help visualize hyphae and spores. These agents cause the cell debris in the background to swell and become less visible. The hairs, spores, and hyphae become more refractile, making it easier to identify them.

However, a skilled clinician can identify hyphae and spores using mineral oil for a mounting media without needing to clear the specimen. In this case, the ectothrix spores and infected hair shaft were an incidental finding on the skin scraping. In practice, it wastes time and money to directly examine hair or hair shafts, unless you are examining Wood’s-positive hairs.

After proper staff training, microscopic diagnosis of dermatophytosis via fungal culture and/or direct examination of hairs from lesions can be done in-house. Diagnostic laboratories that specialize in mycology and/ or veterinary pathogens should be used if your facility lacks the in-house expertise to examine and monitor fungal culture plates. ■



Microscopic examination of fungal culture colony showing *Microsporium canis* macroconidia

DID YOU ANSWER ...

- **No. DTM is not diagnostic for a dermatophyte infection. The diagnosis must be confirmed by microscopic examination of fungal colony growth.**
- **Yes. Direct examination of the hair and/or hair shaft is diagnostic by itself. Hyphae invasion of the hair has occurred, and an external cuff of ectothrix spores is present.**
- **No. A negative Wood’s lamp examination does not rule out *M. canis* infection.**

A FERRET DILEMMA

Mark A. Mitchell, DVM, MS, PhD, Louisiana State University

History. A 6-year-old, male, neutered ferret was presented to a clinic with a history of stranguria, a return to aggressive behavior, and periods of inactivity. According to the clients, the ferret was lethargic and stargazing for 24 hours. The ferret was housed alone, and there were no other pets in the household. Commercial ferret chow and chlorinated tap water were offered daily. Vaccinations (canine distemper virus and rabies virus) were up to date.

Physical examination. The ferret weighed 897 grams and had a body condition score of 2 out of 5. It was quiet, alert, and responsive. Some muscle wasting was evident. An enlarged spleen and two masses were palpated within the abdomen. A firm, nodular mass was palpated cranial and medial to the left kidney, and another large mass was palpated dorsal to the urinary bladder in the caudal abdomen. A pain response was elicited when the caudal abdominal mass was

palpated. The urethra was patent, although it was difficult to express the urinary bladder. Physical examination was otherwise normal.

Radiographs. Exploratory laparotomy was performed, and in addition to the splenomegaly and two masses palpated during the physical examination, an additional mass was identified in the pancreas.

ASK YOURSELF ...

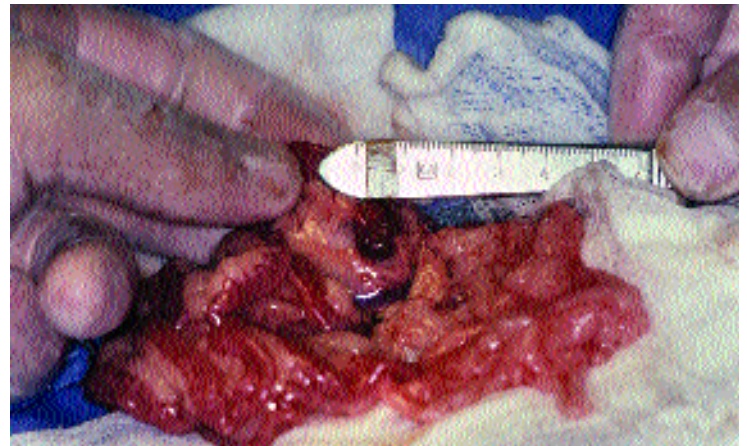
- What are the problems identified from the history, physical examination, and diagnostic tests?
- What is your primary differential at this time?



Diagnostic Testing	Value (reference range [LSU-SVM])
Complete blood count	
Red blood cells (x10 ⁶ /μl)	8.5 (7.5-11.5)
Hematocrit (%)	46 (45-58)
White blood cells (x10 ⁶ /μl)	5.8 (5.0-10.2)
Plasma chemistry analysis*	
Glucose (mg/dl)	58 (80-185)
Aspartate transaminase (IU/L)	475 (23-210)
Creatine kinase (IU/L)	835 (80-250)
Alanine transaminase (IU/L)	325 (75-225)
Urinalysis (cystocentesis)	WNL

LSU-SVM = Louisiana State University School of Veterinary Medicine.

*Values identified as abnormal are listed.



make your diagnosis. then turn the page

Diagnosis. Adrenal gland disease and insulinoma. The caudal abdominal mass was the prostate. Stranguria was attributed to the enlarged prostate. An adrenalectomy was performed, and the histopathologic findings were consistent with an adrenal adenoma. The enlarged prostate was attributed to androgen production from the adrenal adenoma. Although biopsy of the prostate gland can confirm a histopathologic diagnosis, the author does not routinely perform this technique unless primary prostatic disease is suspected.

Hypoglycemia. The weakness and lethargy were attributed to the hypoglycemia. Beta-cell pancreatic tumors are a common finding in geriatric ferrets (> 4 years of age). Ferrets frequently have concurrent adrenal and pancreatic neoplasia. Nodules were removed to remove the pancreatic tumor. The histopathologic findings were consistent with a pancreatic adenocarcinoma.

Muscle wasting. Muscle wasting is a common presentation in the author's practice in ferrets with physiological disturbance, even in the absence of anorexia and with fair body condition scores. The elevated creatine kinase (CK) was attributed to muscle necrosis, whereas the elevated aspartate transaminase (AST) and alanine transaminase (ALT) were attributed to hepatic changes associated with the pancreatic neoplasia. Two liver wedge biopsies were collected at surgery, but the histopathologic findings were unremarkable. Additional samples may have provided more insight into the status of the liver.

Splenomegaly. Splenomegaly is a frequent finding in captive ferrets. Biopsy of the spleen revealed mild extramedullary hematopoiesis.

Recovery from surgery was uneventful. The ferret was reexamined 3 weeks after surgery. The owner reported that the ferret's attitude and behavior had improved. On physical

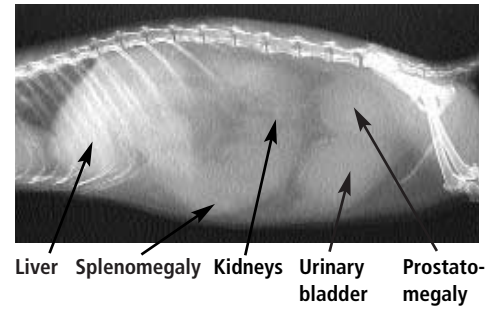
examination, splenomegaly was still present, but the prostate gland was not palpable.

In insulinoma, surgical removal of neoplastic tumors is preferred, although not always corrective. Insulinomas frequently recur. Medical management of insulinoma using prednisone (0.5 to 1.0 mg/kg every 12 hours) and/or diazoxide (10 to 20 mg/kg every 12 hours) should be considered when surgery is not an option or when tumor recurrence is noted. However, management with these drugs is not curative. The prognosis for ferrets with an insulinoma is guarded to poor. The mean survival for ferrets with insulinoma in the author's practice is 14 months.

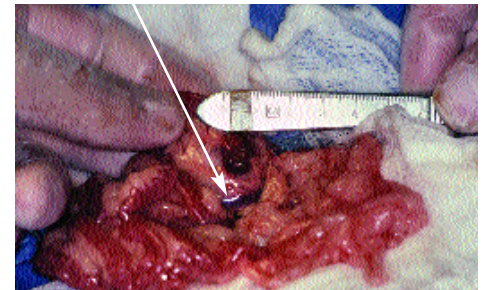
Surgical approach. Adrenal gland tumors can occur in both glands. Adrenalectomy is the preferred treatment for adrenal gland disease. Right-sided adrenalectomy is more difficult than left-sided surgery because the right adrenal gland is closely associated with the caudal vena cavae. Adrenal gland disease can also be managed with medical therapy. Leuprolide acetate (100 µg/kg every 6 to 8 weeks) has been used with excellent results to control adrenal gland disease in the author's practice. However, similar to medical management of insulinomas, drugs can control clinical disease but are not curative.

Prognosis. The prognosis for a ferret with adrenal gland disease varies and should be based on histopathologic diagnosis. The prognosis for a ferret with adrenal adenoma is fair to poor, while adrenal adenocarcinoma

Interpretation



Interpretation. Insulinoma



is associated with a guarded to grave prognosis.

Flutamide has been recommended as a chemotherapeutic agent to manage prostate disease in ferrets. However, the author has used the drug in 16 cases and found the results to be unremarkable.

In assessing a ferret with signs of adrenal disease, the practitioner should be alert to the possibility of prostate infection, which is often present. When the prostate is infected, the prognosis is grave. Even after successful adrenal surgery, the ferret will likely continue to have problems urinating and may not recover. Infection was not a component in this case (as indicated by the urinalysis, etc.); thus, surgery was indicated, and the stranguria resolved. ■

DID YOU ANSWER ...

- **History/physical examination:** stranguria, splenomegaly, two abdominal masses, lethargy/stargazing, muscle wasting, fair body condition
- **Diagnostic tests:**
 - plasma chemistry analysis: hypoglycemia; elevated AST, ALT, and CK
 - Radiographs: splenomegaly, prostatomegaly
- **Insulinoma, adrenal gland disease, enlarged prostate gland, and splenomegaly (nonspecific)**