DERMATOLOGY CLINIC FOR ANIMALS LAS VEGAS

Las Vegas Animal Emergency Clinic
5231 W. Charleston Blvd.
Las Vegas, NV 89146
Phone: (702) 821-1002 Fax: (702) 821-1007

Two Locations:

Animal Emergency Center
3340 E. Patrick Lane
Las Vegas, NV 89120
Phone: (702) 434 - 1002 Fax: (702) 434 - 1058

Visit us on the Web at www.dermvetvegas.com

Dermatology Discourse

Fun with Fungus

"Sparky" a 7 year old castrated male miniature poodle presented for a several month history of trunkal alopecia and crusting which had failed to respond to antibiotics and steroids. He was moderately pruritic.,

Differential Diagnoses

Folliculitis (bacterial, demodicosis, dermatophytosis), and possible underlying hypersensitivity (atopy, cutaneous adverse food reaction, parasite hypersensitivity) or immune-mediated disease (pemphigus foliaceus, systemic lupus erythematosus).

Laboratory Findings

Skin scrapings for mites were negative. An impression smear of exudate under a crust showed pyogranulomatous inflammation with both intracellular and extracellular cocci. The MacKenzie toothbrush technique was used to inoculate a dermatophyte culture.

Treatment

Cephalexin was started (22 mg/kg PO BID for 3 weeks) pending DTM culture results.

Follow Up

Nine days later macroconidia consistent with Trichophyton mentagrophytes were identified from the DTM. Sparky was started on itraconazole (10 mg/kg PO once daily) for 2 weeks followed by 10 mg/kg PO once daily pulse dosingfor 2 consecutive days in a row per week. Topical therapy with lime sulfur dips was prescribed twice weekly. He had a negative fungal culture 8 weeks into therapy and another negative culture 2 weeks later. At the second negative culture itraconazole treatment was discontinued.

Diagnosis of Dermatophytosis

Wood's lamp examination

Trichophyton species do not fluoresce and only about 50% of M. canis strains fluoresce;*2* there can be many false negatives and false positives with this technique and we find it to be of limited value.

Direct Examination of Hairs

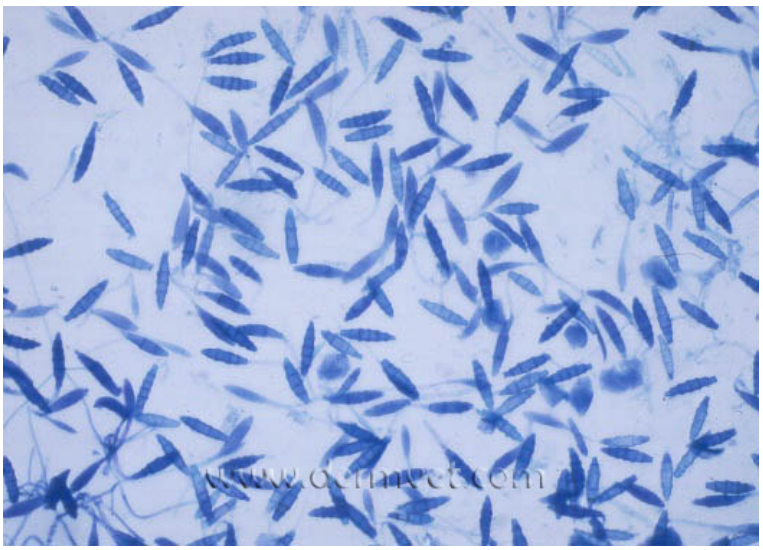
Gently collect hairs from the periphery of the lesions and view them with mineral oil and a cover slip. With practice, ectothrix arthroconidia spores may be seen surrounding the hairs but there are also many false positives and negatives, so a fungal culture is necessary.Fungal Culture: Culture is the gold standard. Use hairs collected from lesions and embed them in the DTM. We prefer the Mackenzie toothbrush technique in which a new unwrapped toothbrush is used to brush suspected areas (or the entire animal in asymptomatic animals) and is then gently impressed into the DTM. We have the best results from using the Sab-Duet DTM from BactiLab (See right). The Sab-Duet contains 2 wells side by side, one with the familiar phenol red pH indicator-containing DTM and a second well that contains plain Sabouraud's dextrose agar which can more easily grow diagnostic macroconidia. The plates should be cultured in the dark at 30% humidity and 30ºC and observed daily for 14-21 days (longer incubation times are necessary in animals receiving antifungal medictation). Dermatophyte colonies are usually white or tan and will never be darkly pigmented. Fungal culture media color change occurs simultaneously with dermatophyte growth. If the gross morphology of the

colony and culture media color change look suspicious, collect spores from the fungal colonies by gently touching clear scotch tape to the colony, then place tape on a slide over 1-2 drops lactophenol blue or other blue stain (see below). Diagnostic macroconidia may take 7-21 days to develop.

Treatment of Dermatophytosis

For localized lesions topical clotrimazole, miconazole, ketoconazole, terbinafine or naftifine twice daily can help speed resolution. In dogs with fungal kerions and focal lesions that are very inflamed, topical antifungals that contain a steroid such as Panalog®, Tresaderm® or Otomax® can be helpful in reducing inflammation. For more widespread lesions, itraconazole, although not labeled for use in dogs and cats, is effective and safe. Itraconazole is keratinophilic and lipophilic resulting in retention of the drug in the skin so it can be used intermittently as pulse dose therapy.*4* Two pulse dosing regimens have been published. One uses use 10 mg/kg once daily for 28 days and then treat for one week on and one week off until 2 consecutive negative cultures are achieved.*7* Pulse therapy using 10 mg/kg once daily for a 2 week on/2 week off treatment schedule until 2 consecutive negative cultures are achieved has also been successful6. Other pulse dosing regimens, such as used in Sparky's case, may also be curative. Anecdotally, fluconazole may also be a safe and effective therapy but can be more costly.

Lufenuron has had mixed reviews. One retrospective study from Israel showed rapid resolution of clinical signs and negative cultures*5* but a more recent controlled, blinded study conducted at the University of Wisconsin showed that lufenuron did not prevent dermatophyte infection nor did it lead to faster resolution of infection once the dermatophyte was established.*8* We have not seen much success with this treatment modality and do not use it. Griseofulvin is less often used because of its potential teratogenicity, bone marrow suppression and gastrointestinal toxicity. Other azole antifungals such as ketoconazole are less desirable since 10% of dogs and 25% of cats can experience side effects such as vomiting, diarrhea and liver toxicity.*2* Culture all animals that have been in contact with the infected animal and begin itraconazole therapy pending culture results. If the cultures are positive, then the in-contact animals must be treated as above. Clean the environment by disposing of bedding, toys and brushes, vacuum daily, and wash surfaces with dilute (1:10) bleach. Correct any concurrent disease and stop all steroids if possible. In dogs with generalized disease and in cats, gentle clipping of long-haired animals and bi-weekly lime-sulfur dips in addition to systemic therapy is often needed to achieve negative cultures1. Antifungal shampoos are less effective because they have minimal residual action and because bathing may macerate infected hairs and spread infection.*2*



References

1. Moriello, KA: Symposium on Feline Dermatophytosis. Veterinary Medicine; October 2003.
2. Scott, DW, Miller, WH, Griffin, CE: Small Animal Dermatology. WB Saunders, Philadelphia; 2001.
3. Foil, CS: Dermatophytosis. Infectious Diseases of the Dog and Cat, 2nd Ed. (CE Greene, ed.). WB Saunders, Philadelphia, 1998.
4. Pinchbeck, LR, et al.: Comparison of pulse administration versus once daily administration of itraconazole for the treatment of Malassezia pachydermatis dermatitis and otitis in dogs. JAVMA, 220 (12): 1807-1812; 2002.
5. Ben-Ziony, Y et al.: Use of lufenuron for treating fungal infection of dogs and cats: 297 cases (1997-1999). JAVMA, 217 (10): 1510-1513; 2000.
6. Mancianti, F. et al.: Efficacy of oral administration of itraconazole to cats with dermatophytosis caused by Microsporum canis. JAVMA 213 (7): 993-995; 1998.
7. Colombo, S. et al.: Efficacy of Itraconazole as combined continuous/pulse therapy in feline dermatophytosis: Preliminary results in nine cases. Vet. Dermatol. 12 (6):347-350; 2001.
8. DeBoer, DJ. et al.: Effects of lufenuron treatment in cats on the establishment and course of Microsporum canis infection following exposure to infected cats. JAVMA 222 (9): 1216-1220; 2003.