



Fungal Skin Diseases

Dermatophytosis

Miscellaneous Fungal Diseases

Aspergillosis

Malassezia Otitis Externa and Dermatitis

Phaeohyphomycosis

Pythiosis

Scopulariopsis brevicaulis Infection

Sporotrichosis

Dermatophytosis

Features

Dermatophytosis (“ringworm”) is a common cosmopolitan disease. It is most commonly caused by *Trichophyton verrucosum*, and less frequently by *T. mentagrophytes*, *T. equinum*, *Microsporum gypseum*, *M. canis*, and *M. nanum*. In temperate climates, the disease is most common in fall and winter, especially in confined animals. There are no apparent breed or sex predilections, and young animals (less than one year old) are most commonly affected.

Lesions can be localized or widespread, few to numerous, and occur anywhere, but are most common on the face, head, pinnae, neck, rump, tail, and perineum (Figs. 1.2-1 to 1.2-7). Tufted papules enlarge into thick, grayish to whitish crusts. Lesions may be painful. Less commonly, annular areas of alopecia and scaling are seen (Fig. 1.2-8). Pruritus is rare, and affected animals are otherwise healthy. From 10% to 100% of a herd may be affected.

Bovine dermatophytosis is a zoonosis. *T. verrucosum* infection in humans causes typical ringworm lesions or kerions in contact areas, especially hands (Fig. 1.2-9), arms, neck, face, and scalp.

Dermatophytosis in otherwise healthy cattle usually spontaneously resolves over the course of 3 to 4 months. In severe outbreaks in semitropical and tropical climates, secondary bacterial infection and myiasis can lead to severe hide damage.



Figure 1.2-1 Dermatophytosis. Solitary thick, whitish crust below eye. Source: Courtesy of L. George.



Figure 1.2-2 Dermatophytosis. Annular, thick, grayish-white crusts on face and neck.



Figure 1.2-3 Dermatophytosis. Annular, thick, grayish-white crusts on rump, tail, and perineum.



Figure 1.2-6 Dermatophytosis. Multiple thick grayish crusts on pinnae, head, and muzzle.

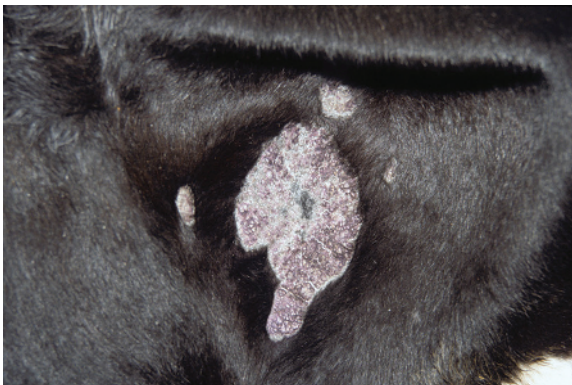


Figure 1.2-4 Dermatophytosis. Thick, grayish-white crusts in flank.



Figure 1.2-7 Dermatophytosis. Coalescing thick whitish crusts with multiple brownish areas of discharge.



Figure 1.2-5 Dermatophytosis. Widespread annular thick grayish crusts.



Figure 1.2-8 Dermatophytosis. Unusual annular areas of alopecia and scaling with minimal crusting on head. Source: Courtesy of L. George.



Figure 1.2-9 Dermatophytosis. Severely inflamed lesions on the hand caused by *Trichophyton verrucosum*.

Differential Diagnosis

Staphylococcal folliculitis, dermatophilosis, demodicosis, stephanofilariasis, sterile eosinophilic folliculitis and furunculosis, and zinc-responsive dermatitis.

Diagnosis

- 1) Microscopy (trichography): Plucked hairs placed in mineral oil or potassium hydroxide contain hyphae and arthroconidia (spores) (Figs. 1.2-10 and 1.2-11).
- 2) Culture.
- 3) Dermatohistopathology: Suppurative luminal folliculitis and pyogranulomatous furunculosis with fungal hyphae and arthroconidia in and on hairs.

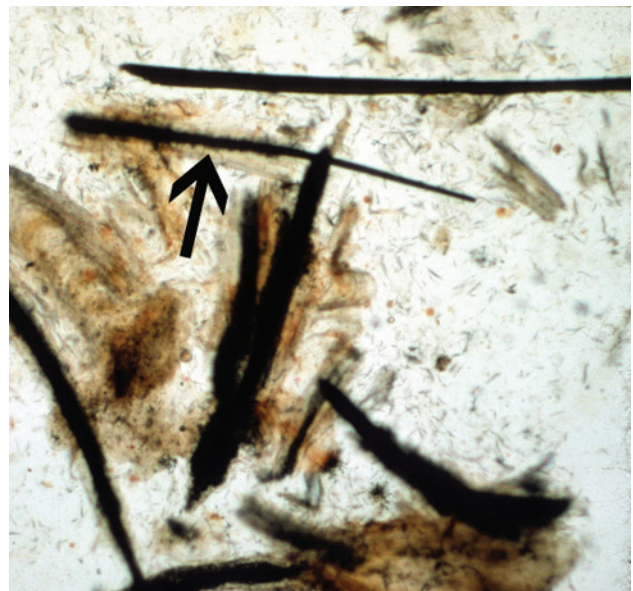


Figure 1.2-10 Dermatophytosis. Plucked hairs in mineral oil. Note thickened, irregular appearance of infected hair (arrow).

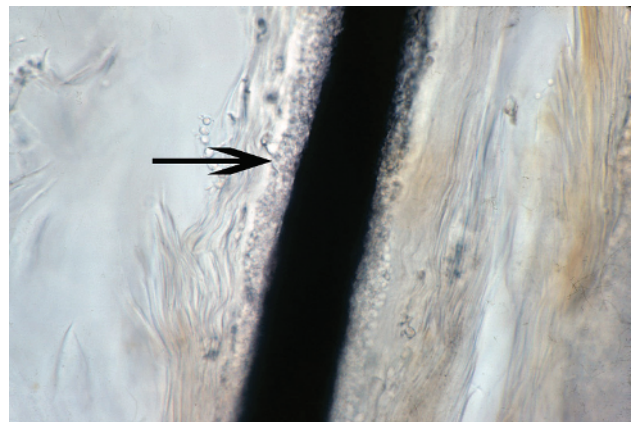


Figure 1.2-11 Dermatophytosis. Numerous arthroconidia (arrow) on surface of infected hair.

Miscellaneous Fungal Diseases

Table 1.2-1 Miscellaneous Fungal Diseases

Aspergillosis (Figs. 1.2-12 and 1.2-13)	Fungal placentitis rarely results in skin lesions on aborted fetuses; lesions can be widespread or localized; annular, grayish, felt-like plaques; or yellow-white, dry plaques; especially <i>Aspergillus</i> spp., <i>Mucor</i> spp., and <i>Pseudoallescheria</i> spp.; culture and dermatohistopathology.
<i>Malassezia</i> Otitis Externa and Dermatitis (Figs. 1.2-14 and 1.2-15)	Otitis externa; common and perhaps geographically restricted (to South America); ceruminous to suppurative otitis externa; predominantly <i>Malassezia sympodialis</i> in summer, and <i>M. globosa</i> in winter; cytology, culture (difficult; lipid-dependent and lipid-independent species), PCR; dermatitis; rare and cosmopolitan; erythema, waxy accumulations, variable pruritus in intramammary sulcus; cytology, culture (no reports); PCR
Phaeohyphomycosis (Figs. 1.2-16 to 1.2-18)	Very rare and cosmopolitan; multiple ulcerated, oozing nodules over rump and thighs (<i>Dreschlera rostrata</i>); multiple nodules on pinnae, tail, vulva, and thighs (<i>Bipolaris spicifera</i>); culture and dermatohistopathology
Pythiosis	Rare; South America and southeastern United States; prolonged exposure to water; <i>Pythium insidiosum</i> ; nodules, ulcers, draining tracts; especially distal legs; dermatohistopathology, immunohistochemistry, culture (difficult); PCR (culture, animal samples)
<i>Scopulariopsis brevicaulis</i> Infection	One case report; widespread hyperkeratotic nodules; dermatohistopathology; culture
Sporotrichosis (Fig. 1.2-19)	Rare; cosmopolitan; wound contamination; usually distal aspect of one limb; nodules, ulcers, crusts, variably corded lymphatics; cytology (often negative); dermatohistopathology (often negative), culture

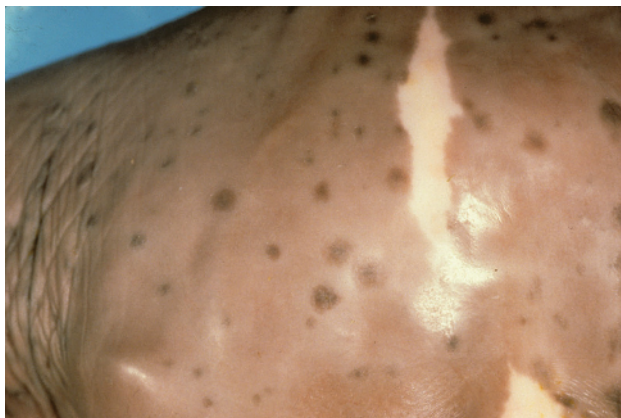


Figure 1.2-12 Aspergillosis. Aborted fetus. Multiple annular, brownish-black, felt-like lesions on skin.

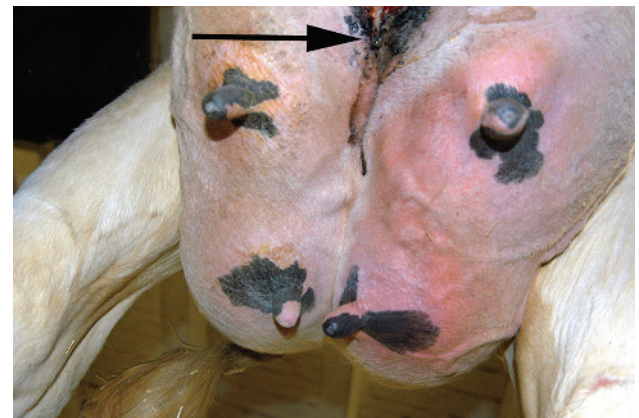


Figure 1.2-14 Yeast dermatitis. Erythema and waxy brown accumulations on the udder and sticky black material in the cleft (arrow).

Figure 1.2-13 Aspergillosis. Multiple raised yellowish plaques on an aborted fetus. *Source:* Courtesy of J. Gourreau, AFSSA.



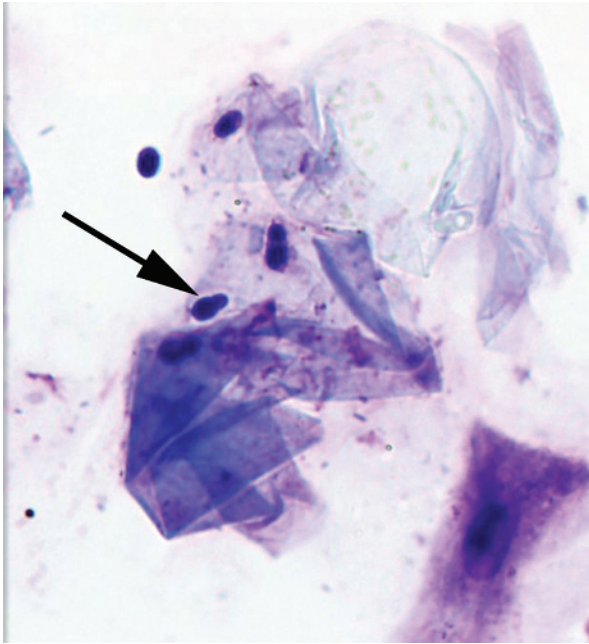


Figure 1.2-15 Yeast dermatitis. Direct smear (Diff-Quik stain). Budding yeasts (arrow) associated with corneocytes.



Figure 1.2-16 Phaeohyphomycosis. Widespread firm nodules. Source: Courtesy of J. Gourreau, AFSSA.



Figure 1.2-17 Phaeohyphomycosis. Multiple granulomatous nodules on hip and flank due to *Exserohilum* sp. Source: Courtesy of H. Whitford, coll. J. Gourreau, AFSSA.

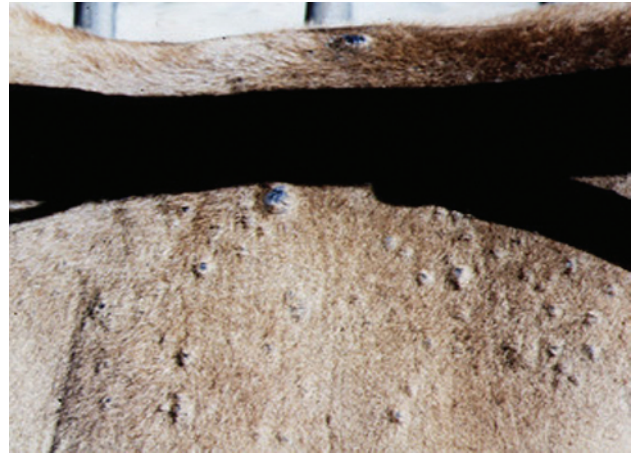


Figure 1.2-18 Phaeohyphomycosis. Multiple crusted nodules on trunk. Source: Courtesy of J. Gourreau, AFSSA.



Figure 1.2-19 Sporotrichosis. Ulcerated nodules on distal leg. Source: Courtesy of J. Gourreau, AFSSA.

References

- Dalis, J.S., *et al.* (2014) Severe generalized skin lesions due to mixed infection with *Sporothrix schenckii* and *Dermatophilus congolensis* in a bull from Jos, Nigeria. *Vet Microbiol* **172**, 475–478.
- Ogawa, S., *et al.* (2008) Generalized hyperkeratosis caused by *Scopulariopsis brevicaulis* in a Japanese black calf. *J Comp Pathol* **138**, 145–150.
- Radostits, O.M., *et al.* (2007) *Veterinary Medicine. A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs and Goats*, 10th ed. Saunders Elsevier, New York, NY.
- Smith, B.P. (2015) *Large Animal Internal Medicine*, 5th ed. Elsevier Mosby, St. Louis, MO.