

Donkey Dermatology

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KEYWORDS

• Donkey • Dermatology • Skin • Dermatoses

KEY POINTS

- The most important bacterial skin infection on a worldwide basis is that caused by the actinomycete *Dermatophilus congolensis*.
- *Trichophyton verrucosum* and *Trichophyton mentagrophytes* have been reported as causing alopecia and scaling in donkeys.
- *Molluscum contagiosum* has been reported in donkeys.
- *Habronema* sp, lice, biting flies, and *Chorioptes* sp can all afflict donkeys, as they do horses. Anecdotally, cutaneous habronemiasis has been thought to cause more severe lesions (in general) in donkeys and mules than in horses.
- Sarcoids are the most common cutaneous tumor in donkeys.

Donkeys (*Equus asinus*) are a species used throughout the world primarily as beasts of burden, but occasionally for other functions, as a meat source or as pets. Although closely related to horses and zebras (they can produce sterile hybrids with both), they have some unique features of their own with regard to dermatologic disease. This article attempts to briefly highlight some of the various dermatoses seen or reported in donkeys, as well as some comparisons with horses when prevalence, presentation, or treatment may differ.

Vocabulary: in English, a male donkey is called a “jack,” a female is a “jenny,” and a castrated male a “cut-jack” or a “donkey gelding.”

CONGENITAL DERMATOSES

As has been reported in horses, junctional epidermal bullosa has been noted in a donkey foal.¹ The disease was characterized by ulceration of large areas of the skin on the legs and ears. Interestingly, the foal was noted to be “normal” at birth. The progression of the disease is fatal.

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BACTERIAL DISEASE

Perhaps the most important bacterial skin infection on a worldwide basis is that caused by the actinomycete *Dermatophilus congolensis*. Antibiotics, such as trimethoprim-sulfamethoxazole, as well as topical washings, are the recommended treatment. Interestingly, dosing intervals for *intravenous* administration of trimethoprim-sulfamethoxazole in horses may not be appropriate for use in donkeys or mules. Donkeys eliminate the drugs rapidly compared with horses.² Thus, dosing intervals probably need to be more frequent in donkeys than in horses. The same has been found in preliminary research for amikacin, oxytetracycline, and the beta-lactam antibiotics. The opposite seems to be the case for the fluoroquinolone marbofloxacin. Another antibiotic in the same class, norfloxacin, should be avoided in donkeys, because of neurologic signs when injected intravenously, swelling at intramuscular injection sites, and poor bioavailability when given orally.³

Other bacterial skin infections, such as those caused by staphylococcal species or *Corynebacterium pseudotuberculosis* (Fig. 1), are also occasionally seen in donkeys.

FUNGAL INFECTIONS

Trichophyton verrucosum and *Trichophyton mentagrophytes* have been reported as causing alopecia and scaling in donkeys.⁴

Deeper fungal infections, such as those caused by *Sporothrix schenckii*, *Cryptococcus* sp, *Histoplasma capsulatum* (North American histoplasmosis), and *H capsulatum* var *farciminosum* (“farcy”: the cause of equine epizootic lymphangitis in east Africa) have been reported in donkeys.^{5–9} The latter fungus especially has yielded a number of articles on both clinical signs and diagnoses. In general, deep fungal infections present clinically with nodules and ulcers, often with a purulent exudate. Thickened (“corded”) lymphatics may be noted, especially in *H capsulatum* var *farciminosum* infections. Sporotrichosis seems to have a tendency to affect the inguinal area and medial aspect of the rear legs (Fig. 2A), although other areas of the body may also be affected (Fig. 2B). Diagnosis may be achieved by cytology, culture, or histopathology.



Fig. 1. (A) A 7-year-old jenny with weight loss due to internal abscesses caused by *Corynebacterium pseudotuberculosis*. (B) The same donkey as in (A). Purulent/hemorrhagic abscesses on both rear legs, caused by *C pseudotuberculosis*. Note edema of legs (“stocking up”).

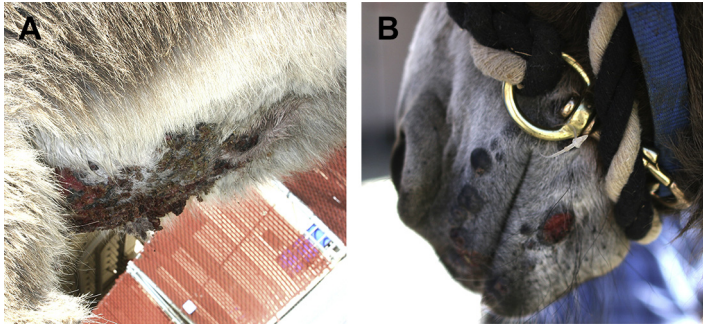


Fig. 2. (A) A 5-year-old jenny with inguinal ulceration and crusts, due to *Sporothrix schenckii* infection. (B) The same donkey as in (A). Ulcerative nodules on muzzle, due to *S. schenckii* infection.

Treatment with oral potassium iodide (KI) and fluconazole may be helpful in controlling, if not curing, these infections.^{8,9} Reported dosage regimens for KI are 0.5 to 2.0 mg/kg daily for 2.5 years⁹ or 40 mg/kg daily for 10 days⁸; the dosage for fluconazole is 1 mg/kg daily for 2 years.⁹

VIRAL INFECTIONS

Molluscum contagiosum has been reported in donkeys.¹⁰ Like horses, donkeys are susceptible to the mucosal viruses, such as vesicular stomatitis.

PARASITIC INFESTATIONS

Habronema sp, lice, biting flies, and *Chorioptes* sp can all afflict donkeys, as they do horses. Anecdotally, cutaneous habronemiasis has been thought to cause more severe lesions (in general) in donkeys and mules than in horses.

A form of cutaneous onchocerciasis is seen in donkeys in Africa and possibly in other nearby areas, which causes severe ulceration in the withers and neck region; it is the adult parasite (sometimes extractable by hand) that causes this problem. The possible causative species is *Onchocerca railieti*. Interestingly, ivermectin has been reported as having both greater and lesser gastrointestinal absorption in donkeys than in horses. This awaits more clarifying studies.³

Donkeys are apparently more susceptible to infestation with the parasite *Besnoitia bennetti* than horses, judging from the reports in the literature.^{11–15} This organism is the same species that afflicts cattle, and is closely related to *Besnoitia tarandi*, which afflicts reindeer (*Rangifer tarandus*).¹¹ The disease presents as nodules (cysts) on the skin, nares, and sclera. Scaling on the skin may be noted. Multiple donkeys in a herd may be affected.^{14,15} Diagnosis may be by histopathology, serologic testing, and polymerase chain reaction.^{14,15} Unfortunately there is no known effective treatment.

Donkeys, like horses, can be afflicted with a hypersensitivity to *Culicoides* spp.¹⁶

NEOPLASIA

Sarcoids are the most common cutaneous tumor in donkeys (**Fig. 3**). Donkeys (particularly male donkeys) have a higher incidence of sarcoids than is seen in horses. As in horses and zebras, a number of researchers have been able to isolate bovine papilloma virus DNA from sarcoids of donkeys.^{17–19}



Fig. 3. A 5-year-old jack with ulcerated verrucous sarcoid.

MISCELLANEOUS DISEASES

Donkeys have been described with pemphigus foliaceus. In one jenny, the disease occurred during, then regressed after 2 of its 5 pregnancies.²⁰

Donkeys have been reported with pituitary pars intermedia dysfunction, also known as equine Cushing disease.²¹ The initial dosage of pergolide reported as effective in treatment is 0.002 mg/kg per day.²²

Equine sarcoidosis has been seen in at least one donkey (Dr Wayne Rosenkrantz, personal communication, Anaheim, CA, December 2012).

“‘Seedy toe’ is by definition an abnormal separation at the white line into which foreign material frequently gets wedged and forced into the depth of the hoof wall. Infection is common. It can arise from laminitis or overgrowth or management problems and is usually regarded as a preventable disease entity” (Professor Derek Knottenbelt, personal communication via e-mail, January 2012). Based on research done at the Donkey Sanctuary (www.thedonkeysanctuary.org.uk), the donkey hoof wall is capable of much greater absorption of water than the hoof wall of the horse. This is presumably an advantage in retaining scarce water in the arid environment where donkeys evolved, but is a detriment in moist climates or wet stables, such that the hooves may be prone to white line disease (Dr Alex Thiemann, personal communication via e-mail, October 2011). This latter disease is defined as “a keratinolytic process that originates on the solar surface of the hoof.”²³

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