

Ringworm

Irrespective of its name, ringworm or dermatophytosis is not a worm or even caused by one, but a fungal disease which affects many species. It is highly infectious and zoonotic spreading from pets to humans and humans to pets. It has the ability to grow on the skin and may use the skin layers, hair or nails as a source of nutrition. Symptoms usually occur as round hairless lesions and although generally harmless it is very contagious. Also it may take months to heal therefore increasing the risk of transmission to others and suffering to the species affected.

Classification

Dermatophytes (plants that live on the soil) are a specialised group of disease producing fungi that share the unusual ability to assimilate and obtain nutrition from keratin. The term dermatophytes is limited to those members of the three genera of

- A) *Microsporum*
- B) *Trichophyton*
- C) *Epidermophyton*

All cause disease by living off the keratinised tissues (skin, hair and nails) of humans and animals. In the vast majority of cases, dermatophytosis is caused by infection with *Microsporum canis* (M canis). This organism can also cause infection in many other species, including cats, dogs, chinchillas and humans. The characteristic ring that we see on humans doesn't always appear as a ring on cats or dogs.

- 1) Ringworm are commonly found on the face, ears, paws and tail
- 2) Usually with scaly lesions that may cause itchiness reddening and inflammation.
- 3) They may grow in size and often become irregular in shape and
- 4) May cause hair shafts to break off and consequently resulting in patches of hair loss.

Transmission

During infection, microscopic spores are produced around infected hairs and these are the main source of infection for other animals or people. The fungal spores shed and can remain infectious in the environment for up to two years as they can survive in carpets, bedding, equipment etc. Transmission can happen by either direct contact with another infected animal or person or by exposure to a contaminated environment or object such as pets bedding or grooming tools. Spores will then adhere to the skin, intact skin is quite resistant whereas any damage to the skin will allow infection to develop quicker. Young pets may have poorer natural skin defences and a less well developed immune response therefore they are at greater risk. Healthy adult cats and dogs usually have a resistance to ringworm

being carriers but showing no symptoms. The incubation period for ringworm is typically several days to three weeks following exposure to the fungus and then about 10-21 days will pass before any lesions occur. But the duration of infection varies considerably between individuals. In some, short – lived self-limiting infections occur whereas in others, infection may continue for months.

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Diagnosis

The three tests most widely used for dermatophytosis are examination of hairs under ultra-violet light, direct microscopy, and fungal culture.

Woods Lamp – during infection with *M canis* a product is produced within infected hairs that cause them to fluoresce an apple green colour under woods lamp illumination. However only 50% of *Microsporum canis* will glow under the lamp, other dermatophytes infections do not result in fluorescence. For best results the lamp should be allowed to warm up for 5-10mins prior to use, and the animal should be examined carefully in darkened room.

Microscopic diagnosis -examination of skin and hair particles from a lesion of infected skin under a microscope to see fungal elements along with spores surrounding infected hairs

Fungal culture- is regarded as the most reliable diagnostic test. Skin scrapings from lesion and lab analysis to see what grows identifying the species of dermatophytes- the disadvantages are it may take up to 3 weeks to get results and occasionally, false negative fungal cultures are obtained, emphasising the significance of using the other diagnostic techniques in addition to culture.

Treatment

If no treatment is carried out, ringworm will run its course in two to four months and the symptoms will resolve themselves. However, treatment is recommended to save your pet from irritation and to cut down the period of time they are contagious.

Treatment can be either systemic (antifungal tablets or liquid given by mouth) or topical (applied to the skin). Systemic therapy is generally regarded as the treatment of choice for dermatophytosis, also little information is available on the efficacy of adjunctive topical therapy. In most cases its best to use a combination of both.

Treatment of Ringworm lesions

Clipping the hair	This is important to reduce the spread of infection and so that the treatment can reach the skin.
Griseofulvin - Tablet	Oral antifungal drug which inhibits fungal reproduction. Dosage is generally 50mg/kg/day. May cause side effects
Itraconazole - liquid	Itraconazole is typically used at 10mg/kg/day. It persists in the stratum corneum 2-4 weeks after ending treatment
Shampoos - topical	Shampoos containing miconazole and chlorhexidine have shown a clear beneficial effect from the addition of twice weekly shampooing. Generally used in addition to systemic treatment to reduce the environmental contamination with arthrospores.

Prevention

Zoonotic diseases are those that can be passed from animals to people and include diseases that infect both people and pets. While generally harmless, ringworm is highly contagious to humans, especially to children, the elderly and anyone with a compromised immune system. Just a few simple measures will help to prevent transmission:-

Wash and groom your pet regularly,

Avoid kissing your pet or letting it lick your face

Keep your pet's bedding and environment clean

Wash your hands often when touching, playing with or caring for your pet.

Decontaminating the environment – bedding, Hoover and steam clean carpets

Use household bleach at concentrations of 1:10 to 1:100.

Wear gloves and change your clothes after handling infected animals.

Any suspicious lesions on pets or humans should be checked as quick action will prevent the transmission of ringworm. Good husbandry is vital where an active infection is diagnosed.

Treatment may vary according to the lesion seen or owner preference. It is important to note that if one cat in a household is diagnosed, then all other animals will need to be examined. In most cases, all cats in a household will be culture-positive and require treatment.

