

## Dermatophytosis in a Labrador Pup - A Case Report

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(Received: January 2024 03/24 Accepted: August 2024)

### Abstract

Dermatophytosis is a superficial fungal skin infection in animals that involves skin, hair and nails. It gained public health importance because of its zoonotic nature. The most common dermatophytes responsible for infection in small animals are *Microsporumcanis*, *M gypseum* and *Trichophyton spp.* A three-month old male Labrador pup was presented with clinical signs of patchy alopecia, mild pruritus, blackish discoloration of skin and erythema with crusts on ventral neck. Clinical examination revealed fluorescence on woods lamp test. The tape impression smears collected from the infected areas of skin were examined by lactophenol cotton blue staining which reveals typical macroconidia of the dermatophytes *Microsporumspp.*, and *Trichophyton spp.* Topical therapy with Miconazole and Chlorhexidine, adjuvant focal therapy with clotrimazole and oral supplementation of immune booster resulted in complete recovery in four weeks.

**Key words:** Dermatophytes, *Microsporum*, *Trichophyton*, dog, management

Dermatophytosis is a superficial fungal infection in animals which is contagious and of

zoonotic importance. The predisposing factors responsible for dermatophyte infection are improper management practices specifically in canines. In dermatophyte infected dogs the major lesions exhibited are on skin, hair and nails. The most common pathogens of canine dermatophytosis belong to the genera *Microsporum*, *Trichophyton* and *Epidermophyton*. Dermatophytosis is more common in warm, humid climates and is seasonal in temperate climates (Moriello *et al.*, 2017). The general presentation of dermatophytosis in animals is a regular and circular alopecia, with erythematous margin and a thin desquamation. Pruritus is generally absent although described in a noticeable proportion in few dogs. Lesions can be single or multiple, and are localized on any part of the animal although the anterior part of the body and the head seem more frequently involved. Usually, there is a centrifugal spread of lesions. Multiple lesions may coalesce, while a spontaneous healing at the center with regrowth of hairs is generally observed (Miller *et al.*, 2013).

### Case History and Observations

A three months old male Labrador pup was presented to the Veterinary Clinical Complex, College of Veterinary Science, Garividi with the history of patchy alopecia, mild pruritus and blackish discoloration of the skin. The pup was promptly dewormed and vaccinated. It was active, alert and the vitals were in normal range. Examination of skin revealed rough hair coat, patchy alopecia all over the body, blackish discoloration of skin at ventral abdomen and medial aspect of elbow joints, erythema with crusts at the ventral aspect of neck (Fig.1&2).

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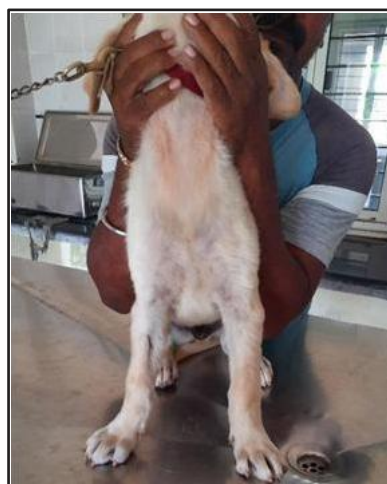
**Diagnosis**

The samples were collected from the infected lesions that include skin scrapings and hair plucks. The samples were subjected for microscopic examination for any parasites and were tested negative for mites. For microbiological examination the samples were subjected for cultural examination. On cultivation on brain heart infusion agar and sabourads dextrose agar the samples were found to be negative for *Malassezia* organisms. When exposed to Woods lamp the infected skin revealed fluorescence at certain areas. Tape impression smears were collected from those areas and subjected for lactophenol cotton blue staining. The microscopic examination revealed spindle shaped and cigar shaped

large thick walled macroconidia encased distinct number of cells divided by transverse septum (Fig.3-6). The hair pluck samples revealed the conical perforations as wedge shaped areas on the hair shaft. The samples were subjected for fungal culture on Sabourauds' dextrose agar that revealed mixed fungal colonies with colony characteristics of *Microsporum* spp., (cottony, white to buff) and *Trichophyton* spp., (Hair pluck was sent for fungal culture. Sabourauds' dextrose agar showed *Microsporum* spp., (cottony, white to buff) and *Trichophyton* spp., (white, fluffy, with a central umbo and flat periphery) colonies. Staining of these colonies with lactophenol cotton blue revealed a mixed infection arthrospores, microconidia and hyphal



**Fig.1** Dog showing patchy alopecia all over the body



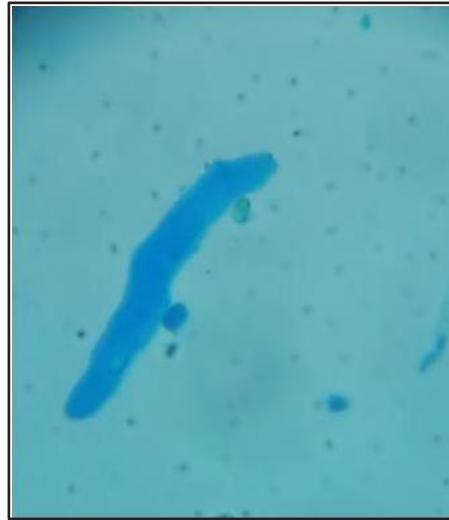
**Fig. 2** Dog showing erythema with Crusts on the ventral aspect of neck

**Table I.** Therapeutic Plan of a dermatophyte infected pup

Duration	Therapeutic Plan	Supportive Therapy
Initial therapy (1 <sup>st</sup> & 2 <sup>nd</sup> week)	Topical Shampoo. Micodin Pow. Clotrimazole (Dusting) Susp. Cefpet (To counteract 2 <sup>o</sup> bacterial infection)	Syp. Immunol
Recovery Phase (3 <sup>rd</sup> & 4 <sup>th</sup> week)	Topical Shampoo. Micodin Pow. Clotrimazole (Dusting)	Syp. Immunol
Control and Monitoring phase (4 <sup>th</sup> week to three months of follow up)	Topical Shampoo. Micodin (Frequency of bathing was reduced with the time).	Syp. Immunol



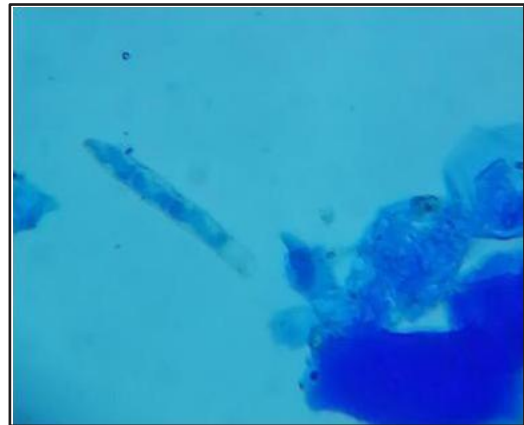
**Fig. 3** Hair pluck showing perforation of Dermatophyte



**Fig. 4** *Microsporumcanis*(40x) upto 15 septa thick walled spindle shape (stained with Lactophenol blue)



**Fig.5** *Microsporumgypseum* (40x) upto 6 septa thin walled shaped smooth thin walled - stained with lactophenol blue



**Fig.6** *Trichophytonmentagrophytes*(40x)- Cigar upto 7 septa on lactophenol blue staining

structures of fungi. The hematological examination revealed moderate anemia with lymphocytosis and biochemical parameters were in normal range.

#### Treatment and Discussion

The initial therapy was started with bathing the pup with topical shampoo containing Miconazole and chlorhexidine (Micodin®) with contact period of 10-15 minutes thrice a week, adjuvant focal lesion therapy with dusting powder Clotrimazole (Candid®), oral supplementation of immunoboosters (Syp. Immunol @ 1ml BID PO) and Susp. Cefpodoxime Proxetil (Cefpet®) @10mg/kg bwt. PO for two weeks (Table I) for

a period of two weeks. The pup showed significant improvement in clinical signs on 9<sup>th</sup> day and regrowth of hair was observed on 12<sup>th</sup> day. However, noting the improvement and recovery the antibiotic was stopped after two weeks. During the recovery phase i.e., third and fourth week, topical applications and supplement were continued. The pup showed significant improvement and recovered uneventfully in four weeks (Fig.7&8). However, to control the infection and to prevent recurrence, treatment with topical shampoo and supplements were continued for three more months with decreased frequency of bathing. No recurrence was observed till the date of reporting.



Fig.7 &8 Post therapy with topical antifungal- Erythema reduced, Regrowth of hair is noticed

Dermatophytosis, commonly known as ringworm is clinically characterized by multifocal alopecia and crust on the skin with a specific formation (Indarjulianto *et al.*, 2017). This disease is of public health importance because of its zoonotic nature and global distribution. It is likely that dermatophytes isolated from normal dogs and cats (e.g., *Microsporumcanis*, *Microsporumgypseum*, *Trichophytonmentagrophytes*, *Trichophytonrubrum*, *Trichophytonterrestre*) simply represent recent contamination from the environment and are not part of their normal flora, whereas *Microsporumcanis* undeniably present as a persistent infection in many asymptomatic or unapparently infected cats, and when found requires treatment because of its zoonotic potential (Miller *et al.*, 2013).

### Conclusion

The present study revealed the presence of superficial dermatophyte skin infection in the young dog. The woods lamp examination, direct microscopic examination and isolation and identification of the dermatophytes on fungal media are the standard tools for the definitive diagnosis of the dermatophytosis. Topical application of Miconazole and Chlorhexidine shampoo and adjuvant focal application of Clotrimazole on lesion for a period of four weeks along with immunoboosters resulted in complete recovery of the animal.

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