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Successful Management of Canine Dermatophytosis Using Itraconazole Pulse Therapy: A Case Report

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Abstract

Canine dermatophytosis is a contagious superficial mycotic infection primarily involving keratinized tissues, including the skin and hair, and is of clinical and zoonotic importance. Multifocal alopecia, variable pruritus, crusty and scaly lesions may be evident in different areas of the body. Diagnosis is made using a combination of clinical history, physical examination and diagnostic tests like Wood's lamp examination, direct microscopic examination and fungal culture. Treatment requires combination of topical and systemic antifungal drugs for a faster recovery. The present report describes the clinical diagnosis and potential utility of itraconazole pulse therapy as a therapeutic approach for canine dermatophytosis.

Keywords: Dermatophytosis; Pulse therapy; Itraconazole; Wood's lamp.

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Introduction

Dermatophytosis, a superficial fungal dermatitis in companion animals, is most commonly caused by *Microsporum canis, M. gypseum* and *Trichophyton mentagrophytes*. In dogs, the infection primarily involves keratinized structures such as the epidermis, hair and claws and may present with variable clinical manifestations, including localized or generalized alopecia, scaling, erythema, crusting, broken hairs and pruritus (Moriello et al., 2017[7]; Paryuni et al., 2020[3]). The gold standard diagnostic techniques for identification of dermatophytosis involve direct microscopic examination of clinical specimens followed by in vitro isolation and identification. The use of a Wood's lamp as a screening tool is widely accepted since that most M. canis-infected clinical samples will fluoresce apple green under a Wood's lamp (Bagra et al., 2022[6]). Aggressive therapy is recommended for infections with *M. canis* and confirmed cases should be treated with combination of topical and systemic antifungal agents like griseofulvin, ketoconazole, itraconazole, terbinafine (Ashwini et al., 2020[1]; Jasmin, 2011[10]). The present paper describes the remission of dermatophytosis in a dog with itraconazole pulse therapy.

Case Presentation

An eight-month-old male German shepherd dog weighing 20 kg was presented to the Veterinary Clinical Complex, Warangal with the history of patchy alopecia at the tail, ear pinna and lateral sides of thorax and abdomen since past 15 days. The lesions initially appeared as small circular areas which subsequently progressed to multiple regions of the body. Dermatological examination revealed multifocal areas of alopecia and crusts on the skin accompanied by minimal pruritus (Fig 1).



Figure 1 Areas of alopecia on ears, sides of thorax and abdomen – Before Treatment.

Wood's lamp examination was performed in a dark room using ultraviolet light (320–400 nm), which revealed characteristic apple-green fluorescence over the affected areas (Fig 2). Superficial skin scrapings and hair plucks were collected from the edges of the lesions and cleared with 10% potassium hydroxide (KOH) for 30 minutes at room temperature followed by direct microscopic examination (10x) which revealed fungal spores.

In addition, hair pluck samples were collected aseptically in sterile tubes and subjected for fungal culture on Sabouraud Dextrose Agar (SDA, Himedia®) and incubated aerobically at 25-30°C for upto three weeks while observing culture growth every two days. Visible fungal growth was observed approximately after two weeks of incubation, characterized by white to buff-coloured colonies and no apparent bacterial contamination was observed during the incubation period. The colonies were subsequently stained with lactophenol cotton blue and examined microscopically under low power, revealing macroconidia (Fig 3). However, detailed morphological characteristics required for species-level identification, including macroconidial shape, size, septation, and surface characteristics, were not documented.



Figure 2 Wood's Lamp examination

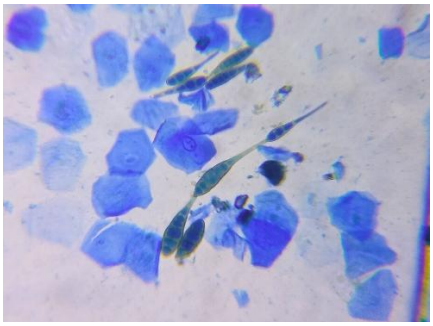


Figure 3 Fungal Spores

Therefore, the findings, in conjunction with the clinical presentation and direct microscopic examination, were considered supportive of Dermatophytosis. Accordingly, treatment was initiated with oral Itraconazole (Tab. Itrapet 100mg) @ 5mg/kg once daily, administered with food, using a pulse regimen consisting of one week on and one week off for a total treatment period of five weeks on oral Itraconazole (Table 1). Treatment duration was determined based on the severity of the lesions and was continued until complete clinical resolution was achieved. Supportive therapy included topical Kiskin lotion (containing ofloxacin, clobetasol propionate, miconazole nitrate, and zinc sulphate) twice daily and liver tonic (Syrup Hepamust @ 5ml BID). Additionally, an antifungal shampoo containing ketoconazole was advised twice weekly. The dog was clinically evaluated at weekly intervals to assess the response to therapy.

Table 1 Itraconazole Pulse therapy.

Treatment weeks	Withdrawal weeks
Week 1 (0-7 days)	Week 2 (8-14 days)
Week 3 (15-21 days)	Week 4 (22-28 days)
Week 5 (29-35 days)	Week 6 (36-42 days)
Week 7 (43-49 days)	Week 8 (50-56 days)
Week 9 (57-63 days)	--

Table 2 Hematobiochemical parameters – Before and after therapy

Parameter	Reference (*MSD vet Manual*)	Before treatment	After treatment (week 10)
Hb (g/dL)	11.9-18.9	12.9	11.8
PCV%	35-57	43	47
TLC (x 10^3/ cmm)	5-14.1	9.65	10.42
Platelets ((lakhs)	2.11–6.21	3.65	2.98
ALT (U/L)	12-118	38	45
ALP (U/L)	7-115	98	104
AST(U/L)	17-95	29	36
Total bilirubin (mg/dL)	0-0.3	0.08	0.12
Total Protein (g/dL)	6.0–7.5	6.8	7.0

A marked clinical response was observed by week five of treatment (29-35 days), characterized by regression of the cutaneous lesions and absence of newly developing lesions. Evident hair regrowth was observed by week seven

(43-49 days) and complete resolution of the reported clinical signs was observed by the end of the treatment period (Fig 4). The dog also showed weight gain and maintained a normal appetite during the treatment period. Post-treatment haematological and biochemical evaluations were reported to be within the normal range, and no apparent adverse effects associated with itraconazole therapy were observed (Table 2).

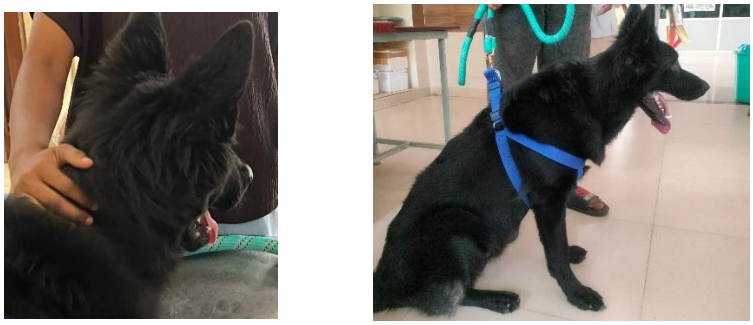


Figure 4 Resolution of skin lesions – After Treatment

Results and Discussion

Dermatophytosis is characterized by focal or multifocal areas of alopecia including broken hairs at the periphery, which extend centrifugally and may heal centrally with variable pruritus. Wood's lamp examination is a useful adjunctive screening technique in the investigation of canine dermatophytosis alongside direct microscopic examination as a rapid method and fungal culture as gold standard procedure (Moriello et al, 2017[7]). Treatment often needs to be continued for many weeks with regular monitoring of the progress of response to therapy (Jasmin, 2011[10]). Therapeutic strategies have evolved considerably, with systemic antifungal agents such as ketoconazole, itraconazole, and terbinafine demonstrating proven efficacy in the management of fungal dermatoses (Mihaylov et al., 2008[5], Moriello et al, 2017[7]).

Oral itraconazole has fewer side effects compared to ketoconazole and is more effective with the dose ranging from 5-10mg/kg repeated 24 hrs for 4-8 weeks or on alternate schedules of one week on and one week off and is the preferred choice for dermatophytosis in young dogs and cats (Rhodes and Werner 2011[8]). Upon systemic administration, itraconazole is distributed to the epidermis through passive uptake by keratinocytes in the basal layer at 3–20 folds higher than plasma concentration, and it persists in the stratum corneum for three weeks after the cessation of therapy and thus prevents recurrence of infection. In the current study, complete resolution of clinical signs was observed by the end of the fifth week of itraconazole therapy (week 9), and thus treatment was discontinued. Haematobiochemical parameters remained unaltered before and after treatment, in agreement with Selvi et al., (2024 [4]) who reported no statistically significant differences in these parameters following itraconazole pulse therapy.

Topical antifungal therapy, including the use of lime sulfur, enilconazole and miconazole, may be used as an adjunct to systemic treatment. The use of kiskin lotion and ketoconazole shampoo in the present study aligns with recent studies on fungal dermatoses in canines by Bansal et al., (2026 [2]) who documented resolution of clinical signs by day 28 using combined systemic and topical azole therapy. Clipping of the hair coat, where appropriate, together with topical antifungal application may help reduce fungal contamination and support clinical management (Tilley and Smith, 2008 [9]).

Conclusion

Overall, this case demonstrates the successful clinical management of canine dermatophytosis using an itraconazole pulse-treatment regimen in combination with topical and supportive therapy. The favourable clinical response observed in this dog suggests that pulse administration of itraconazole may represent a useful therapeutic approach; however, controlled studies involving larger numbers of dogs are required to determine its comparative efficacy, optimal treatment duration and safety relative to continuous antifungal therapy.

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