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Clinical case report on juvenile generalized demodicosis with concurrent pyoderma and dermatophytosis in a Rajapalayam pup

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Abstract
A 3-months-old Rajapalayam pup was presented to the Teaching Veterinary Clinical Complex (TVCC), Veterinary College and Research Institute, Tirunelveli, with a history of bilateral periocular alopecia, alopecia over the dorsal lumbar region, generalized pruritus, recurrent pyoderma on the lower abdomen, dermatophytosis, and progressive hair loss. Deep skin scrapings confirmed the presence of *Demodex* mites on microscopic examination. The pup was treated with Ivermectin (0.6 mg/kg body weight), oral Silvotin (6 mg/kg body weight), systemic antibiotics (Lixen, 10 mg/kg), antifungal shampoo for medicated baths, and San Coat oral supplements for hair growth. The therapy resulted in marked clinical improvement. This case highlights the importance of early diagnosis, identification of concurrent infections, and integrated treatment strategies for the successful management of juvenile demodicosis.

Keywords: Demodex, Rajapalayam, Juvenile demodicosis, Pyoderma, Dermatophytosis

Introduction
Canine demodicosis is a chronic parasitic dermatosis resulting from the over-proliferation of *Demodex canis*, an obligate follicular mite that normally resides as a commensal within the hair follicles and sebaceous glands of dogs. In healthy individuals, the mite population remains under host immune regulation; however, in genetically predisposed or immunocompromised animals, this balance is disrupted, leading to excessive mite multiplication and subsequent clinical disease. Juvenile generalized demodicosis is of particular concern, as it typically occurs in dogs less than one year of age and manifests with diffuse alopecia, erythema, crust formation, pruritus, and scaling. The disease is often exacerbated by secondary bacterial pyoderma or opportunistic fungal infections, which further complicate the clinical outcome and delay recovery.

The Rajapalayam, an indigenous sighthound breed from Southern India, is sparsely reported in the veterinary dermatology literature, with little documentation available regarding its predisposition to parasitic or fungal skin disorders. Therefore, reports of dermatological conditions in this breed are valuable in expanding the clinical knowledge base. In this context, we present a clinical case of generalized juvenile demodicosis in a 3-month-old female Rajapalayam pup, which was further complicated by concurrent pyoderma and dermatophytosis, highlighting the importance of early diagnosis and integrated management in such cases.

Materials and Methods
Case Details
A three-month-old female Rajapalayam pup was presented to the Teaching Veterinary Clinical Complex (TVCC) with a history of progressive hair loss (Figure 1), severe pruritus, bilateral periocular alopecia, alopecia over the dorsal lumbar region, and recurrent episodes of skin infection. The owner also reported that the lesions had been gradually worsening over the past few weeks despite preliminary home treatments.

Clinical Examination

Clinical evaluation revealed bilateral periocular alopecia (Figure 3) and alopecia over the dorsal lumbar region. The pup exhibited generalized pruritus along with erythematous papules and pustules localized on the ventral abdomen (Figure 2). Additional findings included scaling, crust formation, patchy areas of dermatitis, and generalized hair thinning. The presence of pustules and crusts suggested secondary bacterial involvement.

Diagnostic Methods

To confirm the diagnosis, multiple deep skin scrapings were collected from representative areas of alopecic and inflamed skin lesions. The samples were examined under light microscopy using mineral oil preparations. Microscopic examination revealed abundant *Demodex* mites in different developmental stages, including adults, nymphs, and larvae, confirming active parasitic infestation.

Results

Based on the clinical manifestations and microscopic evaluation, the case was diagnosed as juvenile generalized demodicosis, characterized by extensive mite infestation. The condition was further complicated by secondary pyoderma and dermatophytosis, as evidenced by pustule formation, crusting, and scaling (Figure 4).

Fig 1: Rajapalayam pup showing hair loss, erythematous lesion and crust on facial region

Fig 2: Rajapalayam pup showing small pustules and superficial ring worm lesion

Fig 3: Rajapalayam pup showing periocular alopecia and thickening of facial skin with crust

Fig 4: Rajapalayam pup-skin scrapping showing cigar shaped *Demodex* mite 40x magnificaiton

Discussion

Demodicosis in juvenile dogs is primarily attributed to an immature or underdeveloped immune system, which permits uncontrolled proliferation of *Demodex canis*. The present case exemplifies the classical manifestations of juvenile generalized demodicosis, including bilateral periocular alopecia and alopecia over the dorsal lumbar region, eventually progressing to generalized hair loss. Such dermatological changes not only compromise the animal's appearance but also predispose the skin to opportunistic infections.

Secondary bacterial pyoderma is one of the most common complications of demodicosis, often manifested as pustules, erythema, pruritus, and a characteristic foul odor. Concurrent fungal infections, particularly dermatophytosis, may further exacerbate the clinical severity by prolonging healing and complicating therapeutic management. These mixed infections highlight the importance of comprehensive diagnostic approaches and multimodal therapeutic strategies.

This case also emphasizes the significance of breed-specific documentation in veterinary dermatology. Although the Rajapalayam breed is considered hardy and resistant to many diseases, the occurrence of juvenile generalized demodicosis in this pup indicates that genetic or breed-related predisposition cannot be overlooked. Reporting such cases contributes to the existing knowledge base and aids in understanding potential breed susceptibilities.

From a therapeutic standpoint, systemic isoxazolines have emerged as the first-line agents for canine demodicosis due to their superior efficacy and safety profile. In the present case, clinical resolution following isoxazoline therapy reinforces their value in managing generalized forms of the disease. Additionally, the judicious use of systemic antibiotics and antifungal agents was crucial for controlling secondary bacterial and fungal infections, thereby facilitating rapid recovery.

Overall, this case highlights the multifactorial nature of canine demodicosis, the potential role of breed predisposition, and the importance of integrated therapy. Early diagnosis and prompt institution of systemic acaricidal treatment, complemented by appropriate antimicrobial therapy, are critical for favorable outcomes in juvenile demodicosis.

Treatment & Management

- **Ectoparasiticidal therapy: First day** Ivermectin (0.6 mg /kg S/C) was administered. On second day onwards oral Silvotin (0.6 mg /kg PO) for 2 weeks on priscription
- **Antibiotic therapy:** Cephalexin (20 mg/kg, PO, BID for 3 weeks) for pyoderma.
- **Topical therapy:** Weekly medicated baths with benzoyl peroxide shampoo.
- **Supportive care:** Oral nutritional supplementation for skin with Sancoat syrup

Marked improvement in hair regrowth, reduction in pruritus, and healing of lesions was observed within 6-8 weeks of therapy.

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Conflict of Interest

Not available

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