

## Management of Vitamin A Responsive Dermatitis: A Comprehensive Approach

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### ABSTRACT

Two Labrador Retriever dogs were presented to the Small Animal Dermatology Unit, Madras Veterinary College, Chennai, with a history of recurrent skin lesions and mild pruritus in the last 1.5 months. The animals were active and alert with pink conjunctival mucous membranes. Vital signs revealed a rectal temperature of 38.4°C and 38.2°C. Generalized dry crusty lesions, patchy alopecia, hyperkeratinization and rancid fatty odour were noted on integumentary examination. The blood picture revealed leukocytosis and neutrophilia. Skin scraping, adhesive tape impression technique, and Wood's lamp technique were negative. Skin histopathology revealed no keratinization. Based on clinical examination and differential diagnosis of primary keratinization disorder, the animals were treated with a Inj. Vitamin AD<sub>3</sub>E @ 2mL intramuscularly once a week for five weeks and Inj. Chlorpheniramine maleate @ 0.5 mg/kg/IM once followed with oral antihistamine for 5 days and Vitamin A supplementation. The skin lesions healed rapidly and completely with vitamin A treatment, and the cases were confirmed as vitamin A-responsive dermatosis

**Keywords:** Vitamin A, Dermatitis, Management

### INTRODUCTION

Vitamin A plays an important role in cellular differentiation (such as growth, reproduction, and immune response) and helps maintain epithelial integrity (Watson, 1998). Vitamin A-responsive dermatosis is a rare, nutritionally responsive scaling disorder characterized by prominent follicular plugging, focal crusting,

and hyperkeratotic plaques with keratinous, frond-like projections. Lesions typically appear on the ventral and lateral areas of the chest and abdomen. Clinical signs generally begin between the ages of 2 and 5 years and worsen over time (Heinrich *et al.*, 2018). Deficiency in vitamin A results in clinical signs involving different systems, including reproductive failure, growth disorders, increased susceptibility to infections, xerophthalmia, retinal degeneration and night blindness. Dermatological signs resulting from a lack of vitamin A include hyperkeratosis, excessive scaling, occlusion of sebaceous ducts, poor hair coat and alopecia (Jackson, 2021). The breeds that get affected are Cocker Spaniels, Labrador Retrievers and Miniature Schnauzers. The most noticeable clinical aspects of this disorder are concurrent ceruminous otitis externa with severe follicular plugging and the presence of marked hyperkeratotic plaques, which are mainly localized to the ventral and lateral thorax, abdomen (Jackson, 2021). This is not a systemic vitamin A deficiency but a localized deficiency in the epidermis. The major constraint in this disorder is that the identification is only by ruling out the other causes. The skin lesions are resolved rapidly and completely with vitamin A therapy (Ihrke and Goldschmidt 1983). In this report, we highlight the effective diagnosis and management of keratinization disorder.

### HISTORY AND OBSERVATION

Two Labrador retriever dogs were brought to the Small Animal Dermatology Unit, MVC, Chennai, with a history of recurrent skin lesions and mild pruritus in the last 1.5 months. On clinical examination, animals

were active and alert, with a pink conjunctival mucous membrane noticed. Vital parameters revealed rectal temperature of 38.4°C and 38.2°C. The heart and respiratory rates were normal. Generalized dry crusty lesions, patchy alopecia, hyperkeratinization, and rancid odour were noticed in the integumentary system (tail region) (Fig. 1). Skin scraping was done to check ectoparasite but found to be negative. Wood's lamp test and trichography were also found to be negative. As all causes were found to be negative, we supplemented with Vitamin AD<sub>3</sub>E to resolve skin lesions, and the results were positive.

### TREATMENT AND DISCUSSION

Based on general clinical examination, the case was diagnosed as a keratinisation disorder. For further differentiation of primary and secondary keratinization disorder, we collected a whole blood sample



Fig. 1: Localized hair loss at the tail

### CONCLUSION

Vitamin A-responsive dermatosis is an uncommon skin infection that should be considered in dogs with dry, crusty lesions, scaly skin and hyperkeratinization. This case explains the differential diagnosis, treatment and management effectively. Since this is a long-term disease with recurrence, proper dietary requirements with regular check-ups are recommended. This shows the importance of vitamin A and its judicious use in veterinary medicine.

for haematology and serum biochemistry. Tape impression, skin scrapping and Wood's lamp examination were done. Haematology revealed neutrophilia and leukocytosis. Serum biochemistry revealed that all were within the range. Tape impression was negative for Malassezia patchydermis. Skin scraping was negative for mite infestation. Wood's lamp infection was negative for dermatophytosis infection. The skin lesions were differentially diagnosed from primary seborrhea, sebaceous adenitis and zinc-responsive dermatosis. Based on ruling out the other causes and treatment response with Inj. Vitamin AD<sub>3</sub>E @ 2mL intramuscularly and Inj. Chlorpheniramine maleate @ 0.5 mg/kg. From that, the animals were diagnosed with Vitamin A-responsive dermatosis. Oral Vitamin A supplementation daily, which showed good improvement in those animals' skin (Fig. 2).



Fig.2. After treatment, tail hair growth started

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