CANINE ACRAL LICK DERMATITIS: AN IRRITATING CONDITION FOR PET PARENTS

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ABSTRACT

Acral lick dermatitis is a common, frustrating disease characterised by incessant licking behaviour resulting in ulcerative and firm plaques. The lesions are commonly noticed on the distal extremities which become thick, plaque-like and raised. This article focuses on the causes, diagnosis and treatment protocols available for the management of acral lick dermatitis.

Key words: Dog, acral lick granuloma, canine behaviour, dermatology, ALD

I. INTRODUCTION

Dogs often develop acral lick dermatitis (ALD), also known as acral lick granuloma or acral pruritic nodule or neurodermatitis as a self-inflicted skin affliction caused by continuous licking behaviour affecting a pet's quality of life. Hill *et al.* (2006) observed that 2.9% of 559 canine dermatologic cases had ALD. Zoo animals, exotic animals, cattle and humans too have been reported to have ALD (Yeruhum *et al.* 1998). The most natural triggering cause for ALD is an allergy (Atopy, Flea Allergic Dermatitis and Food Hypersensitivity). Secondary bacterial infections are frequently linked to ALD which prolong the itching and licking habit (Shumaker *et al.*, 2018). A psychogenic component may also contribute to the disease process. Effective management of ALD necessitates comprehension of the multifactorial aetiology of this condition.

II. OCCURRENCE

Dogs of any age can be affected. In a study on 31 dogs aged between 1 -12 years, the median age for the onset of disease was 4 years (Shumaker *et al.,* 2018). Large breed dogs like Great Dane, Doberman Pinscher, Golden Retriever, Labrador Retriever, Weimaraner, German shepherd, Boxer and Irish Setters are vulnerable to ALD (Miller *et al.* 2013). The lesions manifest as well-circumscribed, raised, alopecic, indurated, often erosive to ulcerative plaques on the cranial distal extremities and the cranial left carpal region was largely affected when only a unilateral lesion was present (Shumaker, 2018).

III. PATHOGENESIS

The manifestation of acral lick lesion is mostly multifactorial with the lesion unfolding gradually. Chronic flapping of tongue at an affected site will primarily cause haired lesions with intrinsic erythema, scaling, and crusting, progressing to alopecia and erosion. Furunculosis and folliculitis are often present because of constant licking and secondary infections. Itch-lick cycle gets perpetuated after revelation of deeper layers of the epidermis, dermis and the sensory nerve fibres. When not addressed, it leads to dermal fibrosis and epidermal hyperplasia resulting in plaque formation. Foreign body reaction is the most common outcome due to presence of free keratin and ruptured glandular secretions

which further perpetuates the itch cycle. Foremost factors include allergic disorders, bacterial or fungal disease, previous trauma, joint disease, foreign body, neoplasia, neuropathy, or hormonal disorders. Stereotypic or obsessive-compulsive disorder (OCD), anxiety, boredom, attention seeking, or stress can also lead to ALD. Persisting factors include secondary bacterial infections, keratin foreign bodies as a result of licking and furunculosis, bony changes such as osteomyelitis or periostitis, and development of a secondary compulsive disorder.

IV. DIAGNOSTIC WORK-UP

Thorough skin examination should be done by checking for all the dependent parts of the body e.g. ventral aspect of body, axillae, perineal region, area around tail and interdigital space. These regions can be erythemic and pet parents might not note obvious licking behaviour. Ears should be examined as a part of every dermatological examination. An orthopaedic examination should be done for signs of rudimentary joint disease. The opposite leg should be examined for comparison. Radiographs can be helpful in evaluating the presence of arthritis, osteomyelitis or periostitis. Presence of these changes can potentially be a poor prognostic indicator for satisfactory resolution (MacDonald *et al.* 2014). Neurologic examination should be performed in case of any history of trauma; needle electromyography (EMG) and nerve conduction velocity (NCV) studies may be useful in identifying abnormalities in nerve conduction (Shumaker, 2018). Complete laboratory findings (complete blood count, biochemistry, thyroid profile, urinalysis) to rule out endocrinopathies is important. Any dermatological case should never be treated before basic work up of skin scrapings, trichography, tape impressions and cytology. Mackenzie toothbrush technique can be adopted to rule out dermatophytosis. However, in case of poor response to empirical antibiotic therapy based on cytologic findings, culture should be performed. Neoplasia can be an underlying trigger and cytologic or histopathologic evaluation can help to differentiate between ALD, chronic licking or fungal disease. Fine-needle aspiration may be helpful in aiding in diagnosis of neoplasia, but it does not necessarily rule it out. Cytology may reveal the presence of inflammatory cells, fibrocytes, and possibly infectious organisms, supporting a confirmatory diagnosis. ALD can also occur as a stereotypical behaviour of dogs or obsessive-compulsive disorder as the primary underlying trigger. But, before arriving at this conclusion animals should be negative for any current allergic or orthopaedic symptoms and the environmental history should be correlated (confinement to small space, improper attention from owners like no play or no walks outside, animal not permitted into owners living space, death of dog companion).

V. TREATMENT

Successful treatment and prevention of ALD can be achieved by addressing three factors: 1) Identification and resolution or control of the underlying trigger, 2) Treating infection, and 3) Breaking the itch-lick cycle.

Breaking the itch cycle

It can be achieved by applying E-collar. Applying a mixture of neem juice with 18% methyl salicylate, 3.6% camphor and 0.25% capsaicin can help wonders as neem is bitter to taste and other three ingredients help in relieving pain and inflammation. Oral and topical steroids can also be helpful in reducing the inflammation and pruritus associated with these lesions.

Infection

As most ALD lesions are secondarily affected, antibiotic therapy is usually prolonged for 6 to 8 weeks because of time taken for epidermal renewal. If the lesions do not deter with initially selected empirical treatment (e.g., cephalosporins) despite appropriate dose and treatment course, then the culture and isolation should be carried out.

Allergic disorders

Food hypersensitivity should be addressed by elimination diet trials with

commercial or home cooked food with recent introduction to patients. This takes a longer time (6-12 weeks). If the case is not suspected for food hypersensitivity based on history, then an environmental allergen test should be performed. Treatment options include allergen testing and immunotherapy (oclacitinib or cyclosporine). Allergen-specific immunotherapy based on testing (intradermal or serology) may be an effective means of controlling underlying atopic dermatitis and is a viable means of treatment. This therapy takes time (several months to a year) and should be used with adjunctive therapies. Other therapies should be attempted before resorting to oral steroids because of potential adverse side effects associated. Pet parents should be educated about the possible side effects of steroids and should also be educated not to use it for any other reason without a vet consultation.

Laser ablation

Laser ablation should be considered as a treatment option once potential underlying triggers have been addressed, infections resolved, and if the lesion is persisting (Shumaker, 2018). CO_2 laser is an effective method of incising tissue; promoting hemostasis and also ablating proliferative tumors. These lasers have many advantages, including sealing small blood vessels less than 0.5 mm, sealing lymph vessels and nerve endings, and vaporizing tissue (including tumors cells) and bacteria, thus sterilizing the treated area. This requires general or local anesthesia depending on the size, location and type of lesion because of pain inflicted at the time of procedure. However, the post operative pain is very less with CO_2 laser compared to traditional surgery (Boord, 2006).

Cryosurgery

Cryogen is typically liquid nitrogen used to cool tissue to subzero temperatures, inducing tissue damage by two different mechanisms. First, freezing of the targeted tissue inducing ischemia and resulting in ischemic necrosis. Second, additional cellular damage by formation of ice crystals, inducing osmotic cell injury and cellular membrane disruption. Ice crystals form between the cells as the tissue is cooled, creating an osmotic gradient, pulling water out of the cells. With continued cooling, crystals form within the cell, possibly resulting in cellular rupture. Crystals outside the cells melt as the tissue thaws, creating an osmotic gradient, pulling water back into the cell, resulting in swelling and rupturing of the cell. Two to three freeze-thaw cycles are typically used to treat cutaneous or subcutaneous tumours in veterinary medicine because the amount of tissue damage increases with each freeze-thaw cycle (De Queiroz *et al.,* 2008). If the ALD lesion is hyperkeratotic it is often recommended to debulk before performing cryosurgery.

Behavioural/Psychogenic

If behaviour is the underlying cause of ALD, prior to treatment with psychopharmacologic drugs the environment is recommended to be altered by inducing brain activities by engaging in physical activities. Social interactions with other dogs or people around reduce the stress and brings down the anxiety. Punishment or reprimanding for unwanted behaviour is often not useful. Some of the drugs used in compulsive disorders include opioids and selective serotonin reuptake inhibitors (SSRIs). Clomipramine, a tricyclic antidepressant (TCA), has been shown to be effective. Narcotic antagonists (naltrexone) reverse the effects of endogenous opioids via binding to opioid receptors (Dodman *et al.,* 1988). However, it's always recommended to consult a veterinary behaviorist for prescribing treatment plans between behavioural modifications and pharmacologic interventions.

VI. CONCLUSION

Acral lick dermatitis is a problematic condition for both the pets and their parents. The causes are multifactorial and the pathophysiology is complex due to psychosomatic involvements. Proper diagnosis and understanding the root cause of the condition is a mandate for successful

treatment and prevention.

VII. REFERENCES

Boord, M. Laser in dermatology. Clin Tech Small Anim Pract 2006; **21**(3):145–9.

De Queiroz, G.F., Matera, J.M., Zaidan Dagli, M.L. Clinical study of cryosurgery efficacy in the treatment of skin and subcutaneous tumors in dogs and cats. Vet Surg 2008; **37**(5):438–43.

Dodman, N.H., Shuster, L., Court, M.H., *et al.* Behavioral effects of narcotic antagonists. J Assoc Vet Anesthetists 1988; **15**:56–64.

Hill, P.B., Lo A, Eden C.A., *et al.* Survey of the prevalence, diagnosis and treatment of dermatological conditions in small animals in general practice. Vet Rec 2006; **158** (16): 533– 539.

MacDonald, J. Acral lick dermatitis. In: Bonagura JD, editor. Kirk's current veterinary therapy

Miller, W.H., Griffin, C.E., Campbell, K.L. Acral lick dermatitis. Muller and Kirk's small animal dermatology. 7th edition. St Louis (MO): Elsevier; 2013. P. 650–3.

Shumaker, A. K. (2018). Diagnosis and Treatment of Canine Acral Lick Dermatitis. *The Veterinary Clinics of North America. Small Animal Practice*, ***49***(1), 105-123.

XV. Small animal practice. Philadelphia: WB Saunders; 2014. e-Book Chapter 33.

Yeruhum, I., Nyska, A. Acral lick dermatitis in a jackal (Canis aureus). J Zoo Wildl Med 1998; **29**:233.