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OPTIMISING TOPICAL THERAPY IN THE TREATMENT OF SKIN DISEASE

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INTRODUCTION

The topical approach enables agents to be applied in the prevention and treatment of disease of the skin and ears, and at accessible mucosal surfaces. Despite the great potential offered by topical therapy, it is underused. This can be a consequence of lack of appreciation of its capabilities, failure to understand the available products, and the problems of poor compliance. This presentation will cover the use of topical therapy on the canine skin. It will explore the types of topical products acting on skin, their modes of application and strategies which can be adopted to optimise efficacy and compliance. Owing to time constraints, it will focus on agents available in Europe. Treatment of parasitic diseases will not be considered.

STRATEGY IN THE USE OF TOPICAL THERAPY

Topical therapy is appropriate if the therapeutic agent can be delivered more efficiently when applied to the body surface. It enables treatment to be restricted to particular areas, allows agents to be used at concentrations which might be toxic if used more widely or given systemically and avoids problems faced by systemic therapy where injection or oral administration may be difficult. Application of topical products to the hairy skin is a potential issue and restricts the use of certain agents, particularly gels, creams and ointments, which are more suited to relatively hairless areas and can be licked off. However, such preparations can often be avoided by the use of products which penetrate the coat or spread readily over the surface of the skin, including shampoos, lotions, sprays and spot-ons.

Selection of appropriate products can be difficult when many different preparations are available. It is important to choose products for which there is evidence of efficacy, ideally published in well recognised journals. Amongst effective products, selection should be made of those that are easiest to understand and use, promoting compliance. Finally, it is essential that the person providing the product (veterinarian or nurse) describes exactly how it should be used, what effects to expect, how soon these effects may occur, and when the treated animal should be re-examined. Because use of topical products can be quite labour-intensive the owners should be made to feel that they are involved with the treatment process not only in its application but also in reporting responses. Owners who feel they are part of the treatment team are much more likely to comply and persist with therapy.

SELECTION AND USE OF TOPICAL AGENTS

Topical agents can be used to treat disorders of keratinisation, to help repair skin barrier function, to normalise the biology of the skin surface, to eliminate or control skin pathogens, to control inflammatory diseases, and to deliver therapeutic substances via the skin which may then have more general effects.

Keratinisation disorders

These are most commonly treated topically with shampoos and moisturisers. The principal ingredients are keratolytic agents which promote shedding of cornified cells from the stratum corneum, keratoplastic agents which slow the rate of proliferation of keratinocytes, allowing them to develop and function more normally, and antiseborrhoeic agents which reduce sebum production. Dryness at the skin surface can be a consequence of epidermal disruption and promotes epidermal hyperproliferation and pruritus. Hence moisturisers are commonly incorporated or used as rinses after shampooing.

Shampoos for dogs are becoming increasingly sophisticated and agents commonly used in the past, such as coal tar, which can cause drying and irritation, are being replaced. Some antiseborrhoeic agents e.g. sulphur and selenium disulphide, which cause a rebound effect with increased sebum production when use is stopped are also being substituted with compounds that have fewer side effects.

Primary keratinisation disorders e.g. idiopathic seborrhoea of spaniels and vitamin A-responsive dermatosis are much less common than secondary scaling and crusting diseases associated with allergy, endocrinopathy, and autoimmune disease, and disruption of the epidermis by such diseases commonly leads to microbial infection. Thus antiseborrhoeic shampoos may include agents with antimicrobial activity, giving a dual effect, or clinicians may choose to treat keratinisation problems topically whilst using systemic antimicrobials to deal with infectious agents.

The nature of the topical products used and their frequency of application will depend on the condition being treated. Mild scaling dermatoses can normally be treated with keratolytic agents whereas more severe conditions will also require keratoplastic therapy. Antiseborrhoeic agents are beneficial in most keratoseborrhoeic disorders, particularly where the skin is greasy. Improvement of coat condition may be noticed quite quickly but because epidermal renewal takes time, the response at the skin surface and in the hair follicles is likely to take longer. Owners need to be warned that a gradual improvement and the animal should be monitored regularly to check progress and modify treatment if necessary. Generally shampoos will be applied two or three times weekly initially and may then be reduced in frequency to once every two weeks. In long haired dogs, clipping the coat may be advisable to facilitate treatment.

Microbial infections

Cutaneous infections are amongst the commonest diseases treated in small animals. Whilst deep pyoderma and cellulitis require systemic antimicrobials, surface and superficial pyoderma can be treated with topical therapy.

Surface pyoderma affects only the superficial epidermis and includes acute moist dermatitis, skin fold pyoderma and microbial overgrowth, which may also involve Malassezia pachydermatis. In acute moist dermatitis prevention of further trauma is essential and may allow healing without additional therapy. Because the epidermal damage is principally a consequence of trauma, healing occurs rapidly, however, lesions are often painful and topical therapy, requiring direct contact with the skin, can be hazardous. Topical gels or creams with antibiotics and steroids are effective but spraying with an antimicrobial, astringent preparation has been shown to be as effective and may be less hazardous. Lesions should be substantially healed in 7-10 days with either treatment. Where there is marked pruritus, glucocorticoid spray or systemic glucocorticoid therapy may be required. In skin fold pyoderma and microbial overgrowth, regular cleansing (every 2-3 days) with an antimicrobial shampoo is effective. Benzoyl
peroxide, chlorhexidine, and combined chlorhexidine and miconazole are good choices. Chlorhexidine can be unstable and so it is advisable to select well-formulated preparations with published efficacy data showing activity against both bacteria and Malassezia. Benzoyl peroxide needs to be used with care as some animals may develop sensitivity and it can be irritating. Ethyl lactate may be effective in milder cases and has low irritancy. Intervals between shampooing may be extended by the use of antimicrobial creams and gels. In severe cases of surface pyoderma, systemic therapy with cephalaxin and or imidazoles may be needed, depending on the microbes involved.

Superficial pyoderma includes impetigo and superficial folliculitis. Impetigo is characterised by non-follicular pustules and normally responds to antimicrobial shampoos. Use on two or three occasions over a period of 7-10 days should be effective in uncomplicated cases. Spontaneous resolution commonly occurs. Superficial folliculitis is usually treated with systemic antimicrobials however skin condition may be improved and recovery promoted by the use of antibacterial shampoos containing chlorhexidine or benzoyl peroxide, which aid removal of crusts and reduce surface bacterial populations. Mild superficial pyoderma can be treated with such shampoos without the use of systemic antibiotic. Shampooing every 2-3 days is required. Once lesion resolution occurs, shampooing can be reduced to once or twice a week.

Where there is recurrent infection, regular use of an antibacterial shampoo may give control. In view of the fact that the causative pathogen may be harboured on the mucosae, particularly of the upper respiratory tract and anus, some clinicians have used topical antibiotic to treat the nasal and or anal mucosae. Experimental studies have shown that S. pseudintermedius populations can be eliminated by this method using fusidic acid. Anecdotally, this has helped in some cases of recurrent pyoderma.

Topical therapy can be an effective way of dealing with multi-resistant microbes, particularly methicillin-resistant strains of Staphylococcus aureus (MRSA) and S. pseudintermedius (MRSP) which may be resistant to some or all of the registered veterinary systemic antimicrobial agents. Using topical therapy, antimicrobials can be applied at high concentrations that overcome bacterial resistance and may enable even deep pyoderma to be treated effectively.

Although topical therapy is useful in treating yeast infections, it is of limited use in dermatophytosis, for which the systemic approach is more appropriate.

Allergic skin disease

This is associated with cutaneous inflammation, pruritus and secondary microbial infection. It also recognised that defective skin barrier function is an important factor in both sensitisation and evocation of allergic reactions in atopic dermatitis. Topical therapy plays an important role in the treatment and management of all of these problems.

Cutaneous inflammation and pruritus can be controlled with glucocorticoids and systemic therapy with these agents is a well recognised mode of therapy. Glucocorticoid containing gels and creams are less widely used, owning to the difficulty of application on hairy skins and the consequences of systemic absorption and cutaneous atrophy associated with long-term use. Shampoos containing glucocorticoids facilitate treatment of large areas of affected hairy skin and are available in some countries. However, the recent development of a spray preparation containing the potent glucocorticoid, hydrocortisone aceponate, has greatly facilitated control of allergic reactions and other inflammatory conditions affecting skin. This agent is metabolised in skin and thus has no effect systemically. Although only licensed for short-term use, a recent study demonstrated safe use in controlling atopic dermatitis in dogs for up to 70 days. This spray is also being used to control cutaneous inflammation caused by a variety of factors and has been used by the author as adjunctive therapy in pemphigus foliaceus.

Shampoos, lotions and moisturisers are extensively used as adjunctive treatment in canine allergic dermatoses. A variety of different approaches is employed including the use of moisturisers, fatty acids, sugars which can inhibit microbial adherence and modulate epidermal reactivity, and antimicrobial agents which help control microbial populations. In addition the cleansing action of the shampoos is likely to remove allergens and epidermal debris, and thus reduce their penetration. The shampoos generally need to be used twice weekly and the lotions can be used between shampoos to reduce the frequency of washing. In many dogs these topical agents will substantially reduce the need for other anti-inflammatory and antipruritic drugs.

A new and important development is therapy designed to repair and maintain epidermal barrier function in atopic dermatitis. This is increasingly used in human medicine and preparations suitable for dogs are now being developed and marketed. It is recognised that barrier function is largely dependent on lipids located in the stratum corneum including ceramides, free fatty acids and cholesterol. Little research has been published on the efficacy of such preparations but a recent study has shown that application of a spot-on containing all three of these components is able to improve epidermal barrier function in atopic dogs. This approach seems very promising as it should greatly facilitate the treatment of canine atopic dermatitis.

REFERENCES