Proceedings of the Southern European Veterinary Conference - SEVC -

Sep. 29-Oct. 2, 2011, Barcelona, Spain

Next SEVC Conference:

Oct. 18-21, 2012 - Barcelona, Spain

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Optimising Topical Antimicrobial Therapy
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Introduction

Topical antimicrobial therapy provides a powerful method for the treatment and control of microbial infections of the skin and ears, and at accessible mucosal surfaces. High concentrations of antimicrobial agents can be used which may overcome the increasing problems of resistance to systemic antimicrobials, such as meticillin-resistant *Staphylococcus aureus* (MRSA) and the emerging clones of meticillin-resistant *Staphylococcus pseudintermedius* (MRSP) which we now face in veterinary medicine. In addition, adjunctive topical therapy used along with systemic antimicrobials can accelerate recovery and soothe irritated skin.

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 for the treatment of infections by bacteria and yeasts 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.

Strategy in the use of topical therapy

Topical therapy is appropriate if the therapeutic agent can be delivered more efficiently when applied to body surfaces. 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. 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) describe 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

Cutaneous infections are amongst the commonest diseases treated in dogs. Whilst deep pyoderma and cellulitis require systemic antimicrobials, surface and superficial pyoderma can be treated with topical therapy. It is important to remember that cutaneous infections by bacteria and yeasts, such as *Malassezia pachydermatis*, are secondary and occur as a consequence of impaired cutaneous barrier function and/or reduced immunity. Thus, it is always important to diagnose and resolve the underlying conditions. If this is not done, these conditions are likely to recur and more intensive topical therapy may be required to maintain control.

Surface pyoderma affects only the superficial epidermis and includes acute moist dermatitis, skin fold pyoderma and microbial overgrowth. 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, combined chlorhexidine and miconazole and ethyl lactate 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. Spraying with the antimicrobial, astringent preparation mentioned above has also been shown to be effective and, because it is easy to use and generally well-accepted by affected animals, is popular with owners. Intervals between shampooing may also be extended by the use of this spray. In severe cases of surface pyoderma, systemic therapy with cepalexin 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 adjunctive use of antibacterial shampoos containing chlorhexidine, benzoyl peroxide or ethyl lactate, which aid removal of crusts and reduce surface bacterial populations or by the use of shampoos with additional soothing, moisturising and antiseborrheic effects which aid control of underlying diseases. Superficial pyoderma can also be treated with such antimicrobial shampoos without the use of systemic agents. 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 and have a prophylactic effect. They can be particularly effective when the underlying conditions that promote the infection are controlled. This is particularly important in canine atopic dermatitis where skin barrier function is impaired. Unless barrier function is improved and irritation of the skin is reduced, continual antimicrobial treatment is likely to be required. Good control of the allergy and treatment of the skin to improve its barrier function and moisturisation are the keys to minimising the need for antimicrobial therapy. Shampoos and spot-on products which are designed to reduce bacterial colonisation and promote skin barrier function are now available.

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 antimicrobials 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.

Treatment of infections with multiresistant bacteria

Topical therapy can be an effective way of dealing with multi-resistant microbes, particularly MRSA and 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 enable superficial pyoderma to be treated effectively. Shampoos containing chlorhexidine, benzoyl peroxide and ethyl lactate are used every 2-3 days, whilst antimicrobial creams and gels containing fusidic acid or benzoyl peroxide are applied 3 times daily. In such cases it is particularly important to identify and control or eliminate underlying diseases.

References


