Scaling and crusting in dogs: Part 2 – management

Introduction

Scaling and crusting are common in canine clinical practice (see Part 1: Vet CPD Journal, Vol 2, Issue 3). For treatment to be effective in the long-term, underlying causes should be identified and addressed. Dogs with scaling and crusting, irrespective of the cause, however, are prone to staphylococcal and yeast infections which can in turn cause more scaling and crusting. A poorly-managed scaling and crusting disorder can be a source of discomfort to the dog and a source of unpleasant smells and greasy debris for its owners. Fortunately, correction of secondary infections and management of underlying causes can lead to rapid clinical improvement (Miller et al. 2013) and reduction in smell. This article discusses aspects of topical and systemic therapy relevant to both primary and secondary scaling and crusting disorders. The number of primary and secondary scaling and crusting disorders is vast, and a full discussion of specific treatments for these conditions is beyond the scope of this article.

Topical therapy

Topical therapy is indicated for most dogs with scaling and crusting, irrespective of the cause (Figure 1). A wide range of veterinary products is now available, including shampoos, spot-ons, sprays, mousses, pads, and conditioners. Moisturisers and anti-seborrhoeic agents are useful in hydrating the outermost layer of the skin. Examples include coal tar, sulphur, lactic acid, sodium lactate and chitosanide. Both emollients and moisturisers are useful in hydrating and softening the skin and may, therefore, help dogs with chronic pruritus associated with dry skin.

Emollients and moisturisers

Emollients soften, lubricate or soothe the skin, typically by reducing water loss from the epidermis. Moisturisers increase the water content of the stratum corneum, the outermost layer of the skin. Examples include propylene glycol, glycerin, colloidal oatmeal, urea, lactic acid, sodium lactate and chitosanide. Both emollients and moisturisers are useful in hydrating and softening the skin and may, therefore, help dogs with chronic pruritus associated with dry skin.

Antiseborrhoeics

- Keratolytic agents
  Keratolytic agents reduce cohesion between corneocytes thereby softening the stratum corneum and facilitating orderly scale removal. Examples include coal tar, sulphur, lactic acid, benzoyl peroxide, urea, and salicylic acid at higher concentrations.

- Keratoplastic agents
  Keratoplastic agents assist in restoring normal keratinisation and epithelialisation. Examples include coal tar, sulphur, selenium sulphide and salicylic acid. Many shampoos contain keratolytic and keratoplastic agents (Figure 2).

Agents to promote restoration of epidermal barrier

The epidermal barrier is altered in dogs with atopic dermatitis (Santoro et al. 2015) and defective in keratinisation defects, and some products are now marketed for maintaining and supporting the skin barrier.

- Phytosphingosine
  Phytosphingosine is present in the stratum corneum of normal skin, has been shown to increase levels of ceramides (key structural components of the intercellular...
lipid cement in the stratum corneum), and improve skin barrier function in people when applied topically. Phytosphingosine is now included in various veterinary shampoos, spot-ons, mousses, sprays and pads (Douxo, Ceva Animal Health).

**Fatty acids**
A mixture of ceramides, fatty acids and cholesterol is present in Allerderm Spot-on (Virbac Animal Health). Essential fatty acids (EFAs) and essential oils are included in Essential 6 (Dermoscent Animal Dermo-Care). Both spot-ons are marketed in the UK for use in improving or supporting skin barrier function in dogs with skin problems.

**Antimicrobials**
Antibacterial and antifungal agents are indicated in the treatment of staphylococcal and yeast infections in dogs with scaling and crusting.

Topical antimicrobial agents commonly used include chlorhexidine, povidone-iodine, ethyl lactate, miconazole, and benzoyl peroxide. A recent literature review (Mueller et al. 2012) concluded there was good evidence for the efficacy of shampoos containing 2-3% chlorhexidine against staphylococcal bacteria, and for the use of a combination of 2% chlorhexidine and 2% miconazole in dogs with *Malassezia* spp overgrowth (Figures 3a and 3b). Malaseb (Dechra Veterinary Products Limited), Microbex (Virbac Animal Health) and Adaxio (Ceva Animal Health) are licensed in the UK for treating *Malassezia* dermatitis in dogs.

Recent additions to the UK market include PYOspot (Dermoscent Animal Dermo-Care) which contains PhytoC-2, a vegetable extract claimed to restore the balance of the cutaneous flora and soothe the skin by re-inforcing the skin barrier, and Douxo Pyo (Ceva Animal Health) which contains chlorhexidine, climbazole and phytosphingosine.

Antimicrobial activity has been claimed for other topical agents such as honey (Mueller, Bergvall, Bensignor and Bond, 2012), coconut oil (Kabara et al. 1972), tea tree oil (Halcon and Milkus 2004) and aloe vera (Shelton 1991). Further studies are required to evaluate their usefulness in managing canine skin disease.

**Anti-parasitic agents**
Many antiparasitic agents (e.g. fipronil, imidacloprid, selamectin, moxidectin, pyrrixifen, permethrin, amitraz) are delivered in spot-on formulations or aqueous solution. Typically, washing and drying a dog thoroughly takes 30 minutes or more and many dogs do not enjoy the process! After a shampoo has been applied, it should remain in contact with the skin for about 10 minutes before being well-rinsed. Rinsing, which should take 2-3 times longer than lathering, removes debris and shampoo and helps to hydrate the skin (Miller et al. 2013).

Inappropriate shampoos or overuse can increase scaling and irritation. A mild product should be used initially before changing to a stronger one if clinical response is unsatisfactory. For mildly flaky, dry skin, moisturising or emollient-based products should be used. In more severe cases, shampoos containing sulphur and salicylic acid may be indicated. For greasy skin, selenium sulphide and benzoyl peroxide can be helpful although there is currently no benzoyl peroxide-containing veterinary shampoo available in the UK.

Pre-washing with a non-medicated shampoo helps to remove general debris and allows better contact of the antimicrobial or antiseborrhoeic product with the skin, thereby increasing efficacy.

**Clinical response**
The clinical response to shampoos of dogs with chronic scaling disorders is quite variable. Most patients should probably be washed 2-3 times weekly until clinical improvement is noted. A shampoo is selected according to the nature and severity of the lesions and should always be used in accordance with manufacturer’s instructions. Typically, washing and drying a dog thoroughly takes 30 minutes or more and many dogs do not enjoy the process! After a shampoo has been applied, it should remain in contact with the skin for about 10 minutes before being well-rinsed. Rinsing, which should take 2-3 times longer than lathering, removes debris and shampoo and helps to hydrate the skin (Miller et al. 2013).