Treatment and management of allergic dermatitis in cats and dogs

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Summary

Allergic dermatitis is common in cats and dogs and can be frustrating to treat. Correct diagnosis is essential prior to starting treatment. Allergic skin disease is usually due to atopic dermatitis, flea bite hypersensitivity or adverse food reaction; allergic reactions to other parasites or microbial antigens are also seen. Secondary skin infections with bacteria or *Malassezia* often complicate the picture of allergy and multiple treatments are often required to manage allergy and infection. Choices for treatment of allergy include allergen-specific immunotherapy, ciclosporin, oclacitinib, topical or systemic glucocorticoids, essential fatty acids and shampoos.

Key words

atopic dermatitis, **adverse food reaction**, **flea bite hypersensitivity**, **ciclosporin**, **glucocorticoids**, **oclacitinib.**

ATOPIC dermatitis is a “genetically predisposed inflammatory and pruritic allergic skin disease with characteristic clinical features associated with immunoglobulin E (IgE) most commonly directed against environmental allergens” (Halliwell, 2006).

Some dog breeds are predisposed to the condition, including the West Highland white terrier, Labrador retriever, German shepherd dog and Shar Pei in the UK (Paterson, 1998).

Cats can also be affected by allergic skin diseases, which often produce a range of reaction patterns, such as miliary dermatitis, eosinophilic granuloma complex, head and neck pruritus (Figure 1) and symmetrical hair loss.

Differentiation of atopic dermatitis – from reactions to food or parasites – can be difficult in both species and careful diagnostic work, including ruling out other pruritic diseases, is required.

The cause of atopic dermatitis is multifactorial, involving defective skin barrier function (allowing increased water loss and allergen penetration), genetic factors and an aberrant immune response (Miller, Griffin and Campbell, 2013). In the UK, the allergens that most commonly cause atopic dermatitis are house dust mite allergens, but moulds, pollens from grasses, trees and weeds can also be involved in the disease.

Adverse food reaction can involve an immune-mediated response (hypersensitivity) or be non-immune-mediated (food intolerances, which include pharmacological mechanisms, toxins or histamine release). Hypersensitivity to food allergens is often indistinguishable from hypersensitivity to other (airborne or contact) allergens and some authors include food allergy in their definition of atopic dermatitis rather than strictly distinguishing between the two.

Diagnosis of adverse food reaction can only be made by response to a novel or hydrolysed protein diet and treatment is by avoidance of the offending allergen so will not be discussed further here.

Flea bite hypersensitivity (FBH) – or flea allergic dermatitis (FAD) – is a common allergy seen in cats and dogs in the UK. Animals with FAD often have pruritic papular lesions affecting the caudal dorsum, tail base and medial thighs – but can have generalised lesions – and distribution alone is not diagnostic.

Diagnosis is based on history, clinical signs and response to treatment (Miller, Griffin and Campbell, 2013), but other concurrent allergic skin diseases may also need to be addressed as multiple allergies coexisting in one patient is not uncommon. Effective flea control of all animals in a house-hold, as well as environmental control, should be used.

Management of atopic dermatitis is complicated and often requires multiple medications. Firstly, the correct diagnosis must be made, as other diseases including parasites – bacterial skin disease or allergic diseases, such as FBH and adverse food reaction – can mimic or complicate atopy (Miller, Griffin and Campbell, 2013) and need specific treatments.

Criteria exists to assist the clinician in the diagnosis of atopic dermatitis in dogs (Favrot et al, 2010). FAD and adverse food reaction must be investigated and treated prior to making a diagnosis of atopic dermatitis.

Once that diagnosis is certain, some owners may want to pursue specific testing (intradermal allergy testing or serological testing) to reveal which allergens may be responsible for clinical signs. This will also be required if owners want to pursue allergen-specific immunotherapy (ASIT, or desensitisation injections), but is not mandatory, as many forms of treatment are symptomatic and do not require identification of the allergen(s) concerned. Interpretation of results in combination with the clinical signs and seasonality of disease is important when considering allergy testing.

After diagnosis, it is important to educate the client – mentioning the inability to cure atopic dermatitis (Miller, Griffin and Campbell, 2013). Animals will require lifelong medication (Paterson, 1998). Therapy should be tailored to an individual and successful management usually requires multiple therapies (Miller, Griffin and Campbell, 2013). Despite allergy treatment, most patients still suffer from occasional flare-ups of disease and often have secondary infections, generally bacterial (pyoderma) or *Malassezia* dermatitis, which will need treatment in addition to allergy management. Good management is likely to involve regular veterinary visits; better control may be seen if a veterinary dermatologist has input into a case. Management is generally divided into treatment of acute flare-ups and managing the chronic disease.

Cytological examination of stained acetate tape strips, smears from skin lesions, or of aural discharge is a useful part of follow-up at regular visits, especially during an acute flare-up of the disease. Management of secondary bacterial or yeast infections (Figures 2 and 3) should be instituted. However, once a definitive diagnosis of atopy has been made, treating skin inflammation may improve the response to antibacterials, or reduce the need for antimicrobial treatment, as secondary infections are generally as a result of underlying skin inflammation. Suitable antibacterials include (preferably) topical treatments – for example, chlorhexidine and/or miconazole or systemic antibiotics at a suitable dose and duration of treatment.

Persistent bacterial infections should be investigated. Pursue the underlying disease if a diagnosis has not yet been made, and perform culture and sensitivity if resistance is suspected, as resistant bacterial infections, such as methicillin-resistant *Staphylococcus aureus* (MRSA), MRS-pseudointermedius (MRSP) or *Pseudomonas* are not uncommon in chronic skin cases. *Malassezia* dermatitis is often managed with topical treatment only, although systemic antifungals, such as itraconazole, may be required in some cases. Itraconazole is not licensed for use in dogs although a feline version exists and can be used under the cascade if required. Skin scrapes, hair plucks and/or coat brushings may also be performed during acute flares of disease as ectoparasites are commonly responsible for a sudden increase in pruritus.

Avoidance of the causative allergens is an ideal treatment for atopic dermatitis, but is difficult in most cases (Miller, Griffin and Campbell, 2013). House dust mite avoidance can be difficult, but reduced exposure may be possible by using the following guidelines.

• Keep affected dogs and cats out of bedrooms (where house dust mite levels are highest).

• Vacuum regularly (there may also be a benefit to using a high-efficiency particulate air filter).

• Wash human and animal bedding at high temperatures.

• Avoid stuffed toys that may harbour mite allergen, or place them in the freezer regularly to kill mites.

In pollen-allergic cats and dogs, try to avoid the offending pollens if possible by keeping grass short and rinsing the animal off after exposure. Allergen avoidance is a good idea as it is associated with no side effects and is generally cheap to achieve, but total resolution of pruritus is extremely unlikely. Avoidance of inhaled allergens – for example, pollens – is generally unavoidable (Miller, Griffin and Campbell, 2013).

ASIT involves the regular subcutaneous or sublingual administration of causative allergens to affected dogs or cats. The allergen dilution is given at a low dose and increased at each treatment to a set maximum dose unless the animal reacts to the immunotherapy before this point is reached. Cat owners may prefer injecting their cat to administering tablets in the long-term although this depends on the cat and the owner. Success rates are quoted at around 65 per cent, but different studies show variable results (Harvey and McKeever, 1998). Allergens for inclusion in the desensitisation vial are made on the basis of results from serological or intradermal allergy tests, although in cases where the test results conflict with the clinical history (such as non-seasonal clinical signs, but multiple pollen antibody positives), the clinical history should always take precedence.

Side effects include increased irritation (generalised or at the site of injection), and occasional anaphylactic reactions have been reported. Response to ASIT may take several months, so injections should be continued for up to nine months before stopping therapy. Treatment needs to be lifelong, although reduced frequency of administration may be possible after several years. Many animals are maintained on monthly injections.

Glucocorticoids, such as prednisolone or methylprednisolone, produce a rapid reduction in pruritus in cases of atopic dermatitis, which is uncomplicated by secondary infection. Short-acting oral medications should always be used rather than depot preparations. Glucocorticoids are available as systemic or topical treatments, such as ear drops, eye drops, creams, ointments and sprays. Most glucocorticoids are absorbed through the skin when applied topically and can lead to side effects, such as polydipsia, polyuria and polyphagia, urinary tract infections and weight gain.

Longer term, animals may suffer from diabetes mellitus, skin thinning and liver changes, especially when glucocorticoids are given systemically. Glucocorticoids are useful drugs for the short-term management of allergic disease in animals that have seasonal disease or for acute flares of disease in patients that are normally well controlled with other medications. Every other day tapering therapy is recommended for long-term use only in patients that cannot be managed using

other drugs with fewer side effects. Local treatment – for example, ear treatment or local spot therapy (Figure 4), is associated with fewer side effects, although skin thinning and systemic side effects can even be seen with these medications.

Hydrocortisone aceponate is a glucocorticoid that is applied topically and is metabolised within the dermis, so systemic side effects should theoretically be avoided. This is only licensed for seven days use in dogs, but has been used effectively off licence in cats also.

Ciclosporin is a drug that inhibits the activation of T-cells involved in the cellular inflammatory response. Side effects include vomiting and diarrhoea (often transient and self-limiting), gingival hyperplasia and hirsutism. Cats should be tested for viral and protozoal diseases before ciclosporin therapy as they may be at risk of developing clinical toxoplasmosis if exposed to *Toxoplasma gondii* while on treatment. Many patients can be managed on ciclosporin every other day (from a starting daily dose) in the long term, and some can be reduced to a dose twice weekly. Ciclosporin is an excellent choice for chronic management of atopic patients with non-seasonal allergy.

Interleukin 31 is a cytokine that produces pruritic behaviour in dogs (Gonzales et al, 2013). The new drug oclacitinib is one that inhibits interleukin 31 and therefore has an anti-pruritic effect. The starting dose is twice daily with a reduction to once daily after two weeks. Side effects appear rare; occasional gastrointestinal upset is seen. Oclacitinib is not licensed for use in cats.

Shampoos are useful in many cases, although some owners find the required frequency of administration difficult as clinical improvement often only lasts 24 to 48 hours. Shampoos help to treat specific secondary infections, they also reduce the allergen load in the coat and can help improve the skin barrier function (Miller, Griffin and Campbell, 2013).

Antihistamines have historically been used for the management of atopic dermatitis, but the efficacy is generally quite low, around 20 per cent (similar to placebo). Some animals seem to respond, although multiple drugs often need to be trialled before finding an effective one (if any response at all is seen). Side effects are rare, although drowsiness may be seen (which in itself can reduce scratching at night).

Essential fatty acids (EFAs) can be used in the chronic treatment of atopic dermatitis. Atopic animals often have changes in the skin lipid barrier, leading to increased water loss and, thus, a potential for greater adherence of infectious agents. The addition of essential fatty acids to the diet of atopics may improve the skin surface hydrolipid barrier as well as reducing the production of inflammatory cytokines, thereby reducing inflammation. There is a long lag phase (at least one to two months) before clinical improvement is seen (Harvey and McKeever, 1998). The effect on pruritus levels is low, but improvement in skin lesion scores is more significant and EFAs have been proven to have a steroid-sparing effect, allowing reductions in glucocorticoid dosage in many allergic pets.

Summary

In summary, all atopic animals will benefit from excellent flea control and a dietary trial to assess adverse food reaction. Treatment of bacterial and yeast infections, by topical or systemic means, is essential before starting any anti-pruritic management strategies. Shampoos and essential fatty acid therapy are low-risk treatments that may be of value in some patients, and topical/local glucocorticoid treatments are also helpful. Most patients will need more potent treatment options than these, such as allergen-specific immunotherapy, ciclosporin, oclacitinib or systemic glucocorticoids.

Treatment options need to be selected on the basis of the individual response, owner financial situation and the ability of the owner to medicate the patient. The involvement of a dermatologist in the diagnosis and management of atopic patients may be of benefit to discuss the multiple treatment options.

References and further reading

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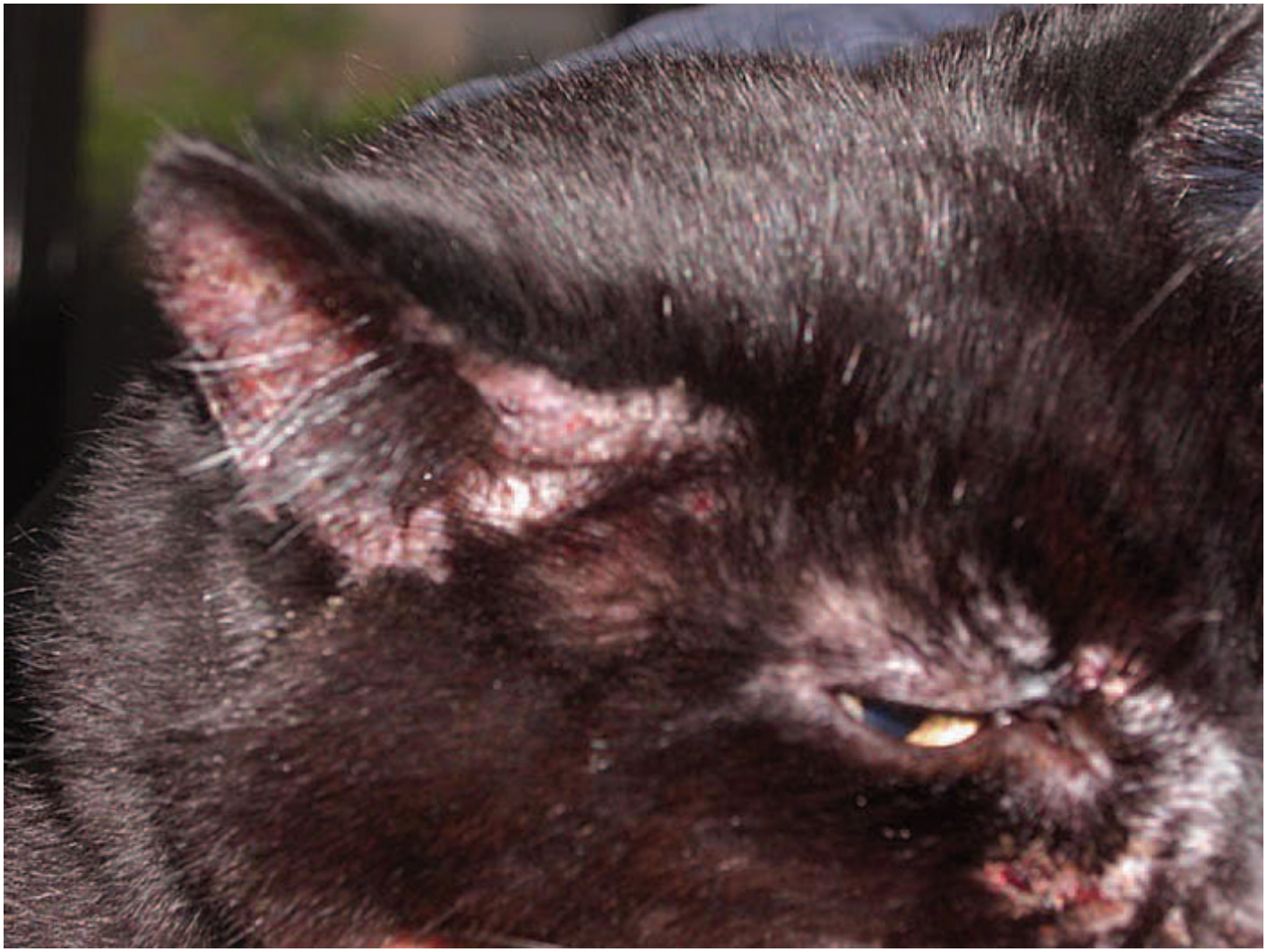

Figure 1. Facial pruritus in an allergic cat.

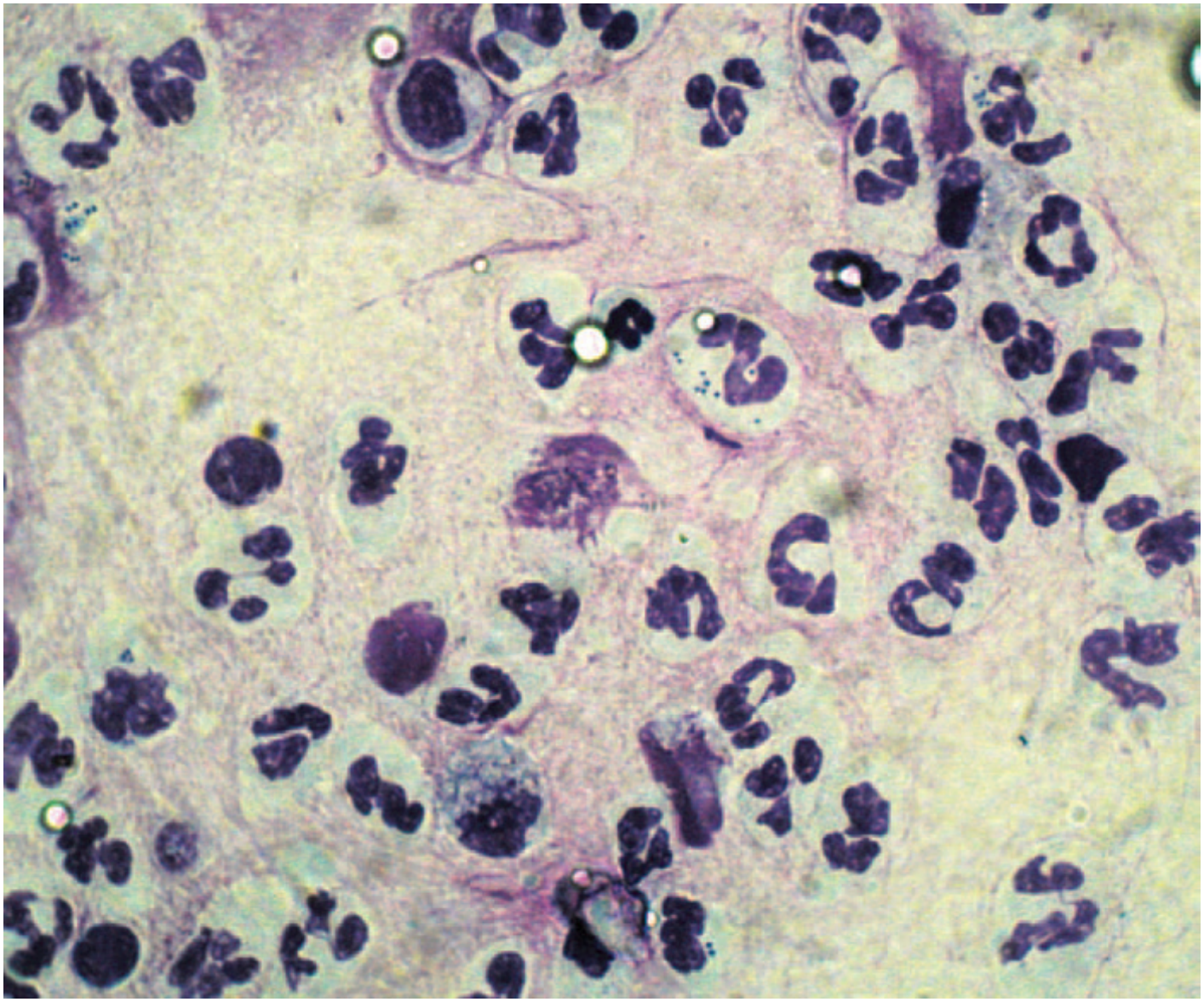

Figure 2. Neutrophils and cocci from the ear of an atopic dog, showing bacterial infection secondary to inflammation.

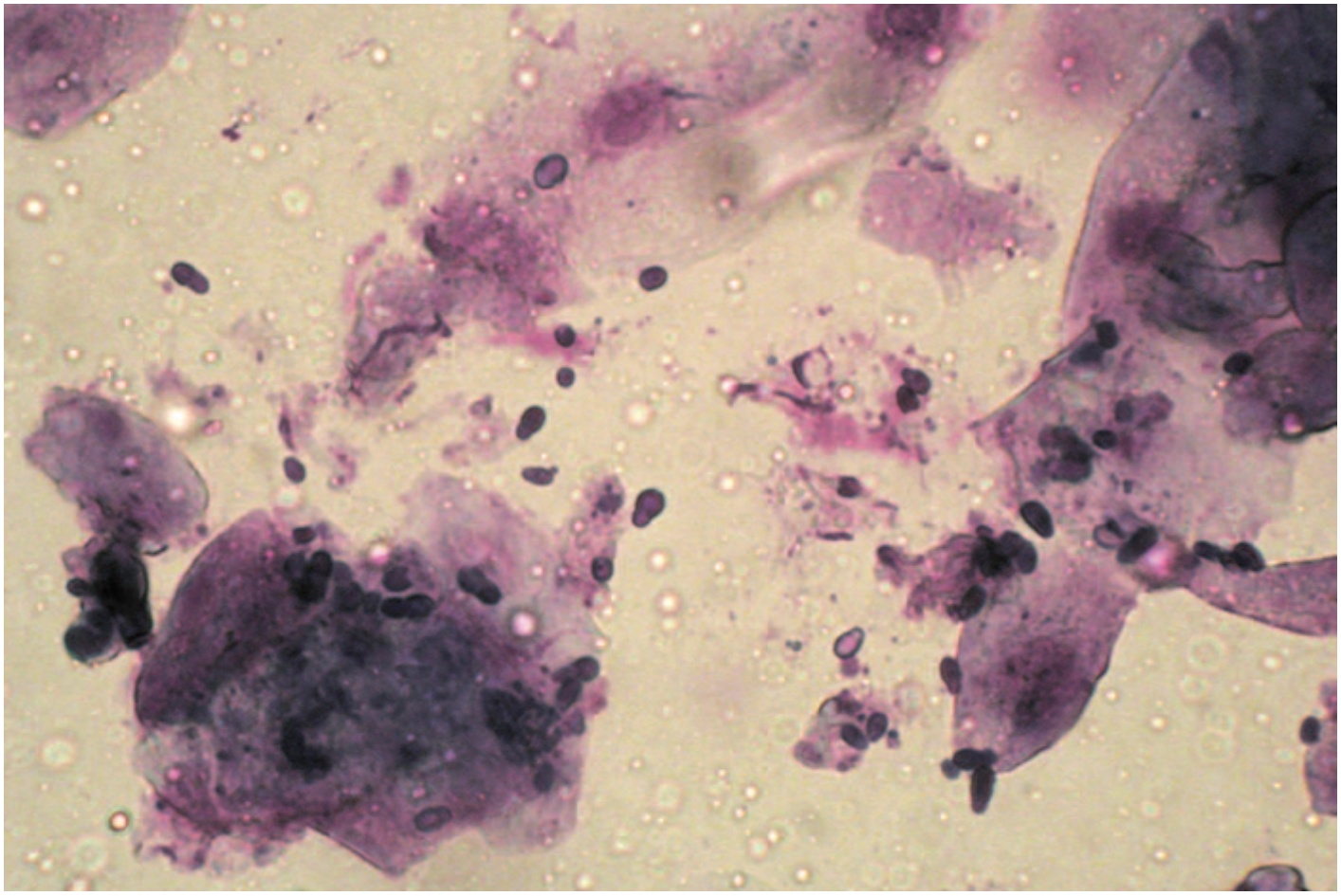

Figure 3. *Malassezia* from the skin of an atopic dog.

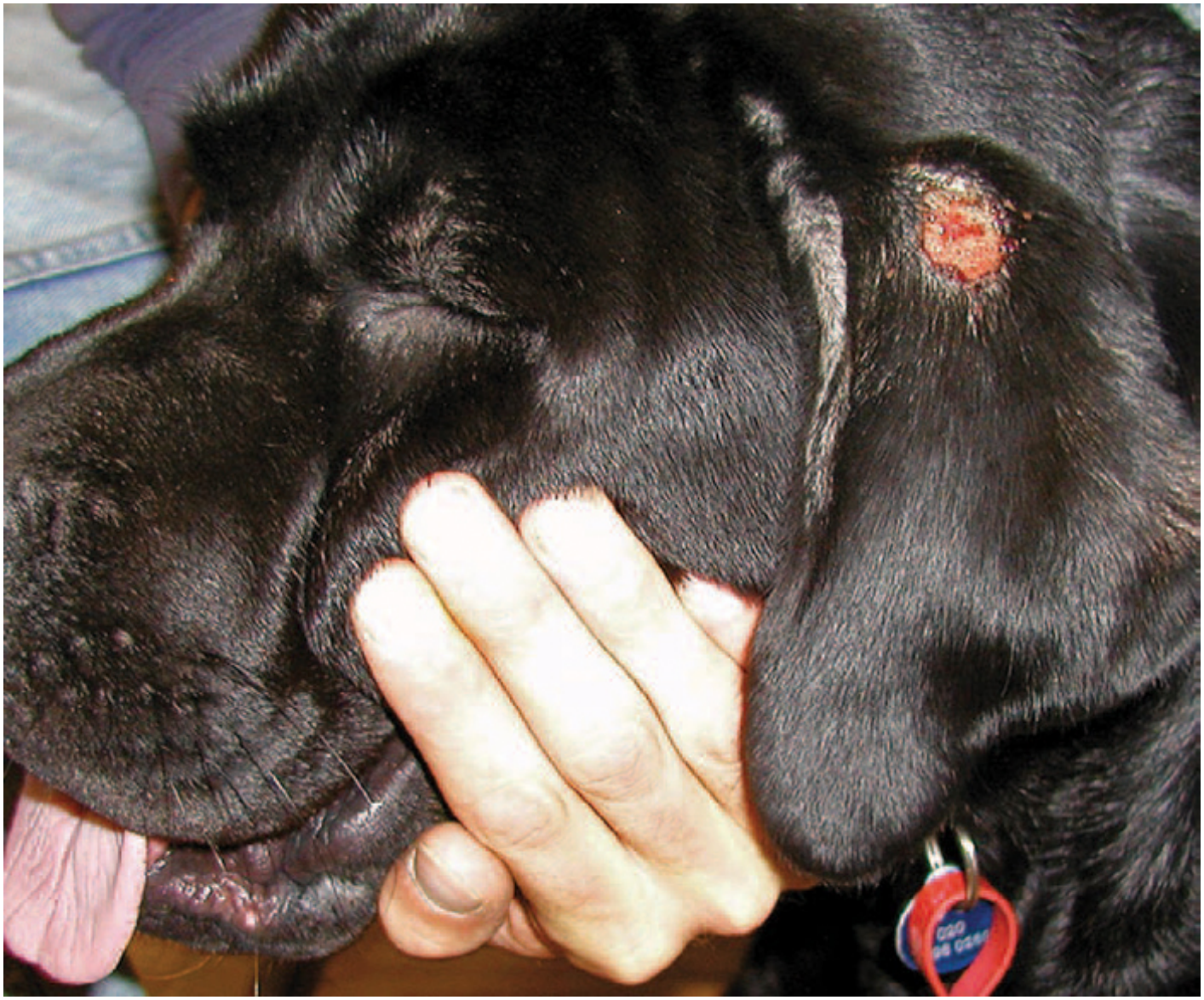

Figure 4. Excoriation on the pinna of a Labrador with atopic dermatitis – suitable for local topical treatment with glucocorticoids.