

Dealing with sweet itch and other summer allergies in horses

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ABSTRACT

Many horses are affected by allergies during the summer months, which can lead to decreased quality of life, management challenges and the inability of the horse to do its intended job.

Sweet itch, an allergy to the saliva of midges, involves pruritus and self-trauma focused on the mane and tail. Seasonal atopic dermatitis leads to urticaria and/or pruritus. Summer pasture-associated recurrent airway obstruction, involving allergy to pollens, results in expiratory dyspnoea.

Treatment plans fall into three main areas:

- **Preventing exposure to the allergen.** Environmental control or barriers.
- **Minimising the allergic response and associated inflammation.** Corticosteroids are potent anti-inflammatories widely used in the management of allergic diseases. The risk of associated laminitis should be considered, but not over-exaggerated. Antihistamines can be a useful adjunctive treatment in allergic skin conditions, or sufficient for milder cases. For respiratory cases, bronchodilators work well alongside corticosteroids.
- **Altering the immune response.** Following identification of allergens, a course of allergen-specific immunotherapy or hyposensitisation may be successful.

Management of these cases can be challenging and requires ongoing time and financial commitment. Vet and owner need to work together to develop a treatment plan that is effective in alleviating symptoms, and sustainable.

Many horses are affected by allergies during the summer months, with potential allergens including tree, grass and flower pollens, and the saliva of biting insects.

An allergic reaction is when the immune system overreacts to an agent the majority of individuals are unaffected by. Following the process of sensitisation in the allergic horse, contact with the allergen induces rapid cross-linking of receptor-bound IgE and subsequent release of inflammatory mediators¹.

Sweet itch



Figure 1. Self-trauma due to pruritus in insect bite hypersensitivity (IBH).

Sweet itch is the colloquial name for insect bite hypersensitivity (IBH), an allergy to the saliva of *Culicoides* midges. IBH is thought to involve predominantly type-one (immediate – within six hours of the bite) and type-four (delayed) hypersensitivity reactions².

IBH is the most common cause of summer pruritus and includes hereditary and environmental factors in its pathogenesis³.

Certain breeds seem to have a genetic predisposition, including Icelandic, Connemara, Arabian and American quarter horse, and it is unwise to breed from affected animals.

Initially, pruritus is focused along the mane and tail head – the preferred biting zones of the midge. Animals are agitated, trying to scratch on any available object, and changes in temperament and performance may occur. Small papules are formed, and subsequent rubbing and scratching results in broken hairs and sore, inflamed skin. Lesions extend along the back and neck to around the ears and face (**Figure 1**).

Some horses have the focus along the ventral midline. With repeated self-trauma, hair is rubbed away, and skin hyperpigmentation and lichenification occurs. Chronically affected animals can develop skin rugae at the base of the mane and tail due to intradermal oedema (**Figure 2**).

Horses are rarely affected at younger than four years of age⁴. Once IBH develops, it is not possible to cure the condition, only to manage it, and it frequently gets progressively worse each year². Diagnosis is often from seeing mane and tail pruritus during the spring and summer. Ectoparasite infestation should be ruled out (by coat brushings and/or avermectin treatment).

In the management of IBH, as with so many conditions, prevention is better than cure. The environmental burden can be reduced by minimising sites with standing water where midge larvae develop, including frequently cleaning out water troughs and avoiding heavy clay pastures that can become boggy. Also, frequent removal of manure piles.

To prevent biting, horses should be stabled when *Culicoides* are most active – at dawn, dusk and on overcast, humid days. *Culicoides* can pass through regular fly screens, but are poor fliers, so stable fans can be effective. Overhead insecticide misters can be set up in stables, but bug zappers probably don't make sufficient difference to insect numbers.

A popular option – particularly if horses have to be out – is to invest in an insect-proof rug, which covers the vast majority of the horse, including the head, ears, neck, body, belly and tail head. Made from purpose-designed fabric, these rugs prevent biting, but are breathable, so can be worn all summer.

Fly repellents containing permethrin are effective and last several days. As well as being found in products licensed for horses, some people use permethrin-impregnated cattle ear tags attached to the head collar². Benzyl benzoate can be applied daily as a diluted suspension to affected areas; however, it can be a skin irritant, so should not be applied to broken skin or if a reaction is seen. Use of insecticides containing N, N-diethyl-meta-toluamide, is generally not recommended as they can cause irritation and sweating².

Another repellent with many anecdotal good reports is topical application of the human product Avon Skin So Soft diluted with water. The oil also makes it difficult for the midges to settle and bite, as can application of a grooming conditioning spray.

Once a horse has been bitten and reacted, treatment is aimed at reducing inflammation and self-trauma. Oatmeal and aloe shampoos are soothing. Corticosteroids are a potent anti-inflammatory that reduce pruritus. Topical treatment with hydrocortisone aceponate is useful for small areas (Littlewood, personal communication). If extensive areas are affected, a systemic approach involves initial dexamethasone (0.1mg/kg IV) then prednisolone (0.5mg/kg to 1mg/kg PO sid; in the morning). Once pruritus is controlled, dosing can be decreased to every other day, then, if possible, every third day.



Figure 2. Tail hair rubbed away and skin rugae in a case of chronic IBH.

Antihistamines are generally ineffective as a sole treatment, but are worth trying for milder cases to potentially enable a lower corticosteroid dose, or to help prevent future flare-ups.

Recommendations are hydroxyzine hydrochloride (1mg/kg to 2mg/kg bid/tid), chlorpheniramine (0.25mg/kg to 0.5mg/kg bid), diphenhydramine (1mg/kg to 2mg/kg bid/tid) or cetirizine (0.2mg/kg to 0.4mg/kg bid; Littlewood, personal communication). The potential side effect of drowsiness is rarely seen.

Allergen-specific immunotherapy (ASIT), or hyposensitisation, has variable results with some anecdotal success⁴, but following a study was not considered useful in practice for IBH⁵. Cavalesse (Janssen Animal Health) contains nicotinamide and is designed to increase skin resistance to allergies and reduce histamine production. Combination packs contain a solution for daily oral administration, starting before the allergy season, and a topical gel with aloe.

NSAIDs are useful for horses that cannot be given steroids. Antibiotics may be indicated for skin infections as a secondary complication of self-trauma. Signs include erect hairs on papules, crusts, pain, nodules and draining tracts.

From the number of options available it is evident management and treatment of this condition can be challenging. Plans have to be tailored to the individual situation and may involve some trial and adaptation.

Some horses have allergic reactions to other biting insects, such as black flies, stable flies and horse flies, with oozing bites, urticaria and pruritus. This can be focused on the head and neck or be more generalised. Prevention and treatment strategies are broadly similar to that for IBH.

Seasonal atopic dermatitis

Atopic dermatitis is probably more common than reported⁶. Urticaria is the most common presentation (**Figure 3**), followed by urticaria with pruritus and then pruritus alone – typically affecting the face and trunk. Self-trauma follows and sometimes secondary bacterial pyoderma. Some cases are summer seasonal. Atopic dermatitis overlaps in clinical signs and treatment with IBH, and the two conditions can coexist.

Causal allergens can be difficult to identify. Exclusion trials can be lengthy and may be inconclusive. Intradermal skin testing (**Figure 4**) involves comparing a range of potential allergens against a positive and negative control. Serological testing is less reliable, but may be useful if referral for intradermal testing is not possible⁷. Interpretation of allergy testing is often difficult¹ so should be done by an experienced dermatologist, alongside the history. Results may enable an allergen to be avoided, targeted medication if exposure is likely, or ASIT to be prescribed.



Figure 3. Severe urticarial reaction. Image: © Janet Littlewood.

ASIT involves a course of SC injections with increasing doses of allergen intended to alter the immune system's response. Although some horses respond quickly, effectiveness should not be fully evaluated before 12 months and vets need to keep in communication with the client. Approximately 70% of atopic horses improve with ASIT5 and this improvement may persist once injections are stopped⁸.

In a long-term follow-up of suspected equine atopic dermatitis cases investigated by intradermal skin testing, owners reported benefit from corticosteroids in 33/35 (94.3%), from ASIT in 9/14 (64.3%) and from antihistamines in 17/28 (60.7%)⁹.

Summer pasture-associated obstructive pulmonary disease

Summer pasture-associated obstructive pulmonary disease (SPAOPD) involves pulmonary hypersensitivity to airborne pollen and mould pasture allergens leading to bronchoconstriction, inflammatory airway narrowing and plugging of small airways with mucopus¹⁰. In some horses, an acute onset or worsening of the condition manifests with severe respiratory dyspnoea, coughing and audible wheezing, which is a veterinary emergency.

Treatment is with a muscarinic antagonist to alleviate bronchoconstriction – either atropine sulphate (0.02mg/kg IV) or N-butylscopolammonium bromide (0.3mg/kg IV; not licensed for this use in horses). Maximal response is by 20 minutes – giving an indication of the degree of obstruction due to bronchoconstriction and inflammation. Dexamethasone (0.1mg/kg IV) is the anti-inflammatory of choice for acute summer pasture-associated recurrent airway obstruction (SPARAO).

Other horses presenting with a history of coughing or nasal discharge may have an altered respiratory pattern or exercise intolerance. On clinical examination, they are non-pyrexia, with

increased expiratory effort at rest (with normal or increased respiratory rate). On auscultation, a generalised increased audibility of lung sounds is often heard, coarse crackles over trachea (air bubbling through secretions), end expiratory wheezes and early inspiratory fine crackles (small airways suddenly opening)¹¹. Further diagnostics include endoscopy, tracheal wash and bronchoalveolar lavage (BAL). A BAL is most useful when diffuse airway disease is suspected as there is good correlation between BAL cytology and lung histopathology, and degree of airway hyperreactivity. In SPAOPD, expect to see non-toxic neutrophils increase from less than 5% to more than 20%.

Treatment will aim to improve respiratory function to (near) normal, although this may not be possible in severe cases. Other factors include the horse's intended use, compliance and budget¹². Anecdotally, SPARAO cases can be more difficult to treat than recurrent airway obstruction (RAO). Environmental management is the cornerstone of treatment for RAO, but can be very challenging with SPARAO cases as, if left at pasture, they are continually exposed to inciting allergens and, if stabled, are likely exposed to a level of dust that will also aggravate the condition. Any bedding and supplementary forage must be dust-free.

Pharmaceutical treatment may be given systemically or via the inhaled route. For long-term management of chronic cases, inhaled therapy may be preferable to achieve higher concentration in target tissues, with shorter withdrawal times for competition horses. However, for severe cases with bronchoconstriction and mucus-plugged airways, inhalational therapy is unlikely to be effective¹².

As an inflammatory disease, SPARAO requires anti-inflammatory treatment and NSAIDs are not effective. Prednisolone (1mg/kg sid PO) is continued until no increased respiratory effort or nasal discharge is seen. Inhaled steroids are often delivered via a spacer system and metered dose inhalers (MDIs) – beclometasone (1µg/kg to 6µg/kg bid) or fluticasone (up to 4µg/kg bid). An alternative is nebulisation with dexamethasone (0.01mg/kg; not licensed for this use in horses) and equal volume saline¹². The latter system has a much higher purchase price, but lower ongoing costs.



Figure 4. An intradermal skin test being performed. Image: © Janet Littlewood.

Bronchodilators are given to relieve bronchospasm. Clenbuterol, a β_2 -adrenergic agonist, is widely used, although, over time, receptors downregulate, making it less effective. This downregulation is reduced by concurrent administration of corticosteroids, so extended use of clenbuterol should be combined with an inhaled corticosteroid¹³.

Additionally, the use of a bronchodilator may enable a lower dose of steroid to be used. Recommended dosage is 0.8 μ g/kg PO bid; however, if insufficient clinical improvement is seen, this can be increased gradually to a maximum of 3.2 μ g/kg¹⁴. Clenbuterol also has local anti-inflammatory effects and thins the mucus layer, improving clearance by cilia¹³.

Inhaled bronchodilators can be used prior to inhaled steroids to increase penetration into lower airways. Salbutamol (1 μ g/kg to 2 μ g/kg bid-qid via metered dose inhaler; MDI), a β_2 -adrenergic agonist, has a transient effect. Ipratropium (0.4 μ g/kg to 0.8 μ g/kg bid-qid via MDI), an anticholinergic, has a longer duration of action. Mucolytics, such as dextromethorphan (0.3mg/kg bid), are a useful adjunctive treatment – especially for cases with extensive crackles on auscultation. The importance of mast cells in SPAOPD is not fully understood, but sodium cromoglycate (0.04mg/kg to 0.06mg/kg bid via MDI)¹² may be useful.

Steroids and laminitis

Glucocorticoids are valuable in the management of allergic conditions; however, concern about laminitis often restricts their use. In one study¹⁵, the prevalence of laminitis in 416 prednisolone-treated horses was not significantly different to 814 time-matched controls.

Horses that have had previous episodes of laminitis and/or have (uncontrolled) equine Cushing's disease or equine metabolic syndrome present a higher risk, and it is up to the vet and owner to decide whether the benefits outweigh the risk for the individual horse.

Runny eyes

Epiphora and mucoid ocular discharge during the summer is frequently attributed to allergies by owners. Seasonal fly irritation is often the most common cause and can be managed by masks to avoid flies contacting the eyes. Onchocerca should be ruled out. Horses that have developed conjunctivitis require topical antibiotic and/or anti-inflammatory treatment. For cases where an allergic aetiology is still suspected, sodium chromoglycate eye drops may be tried. These are mast cell stabilisers, so work best when administered before exposure to the allergen.

- Some drugs mentioned in this article are used under the cascade.
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