

Equine allergic reactions: diagnostics and treatment options

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ABSTRACT

Allergies affect a large number of equines and can be distressing for both the animal and owner, as some can be lifelong and difficult to diagnose and treat. When dealing with allergic reactions, clinical history, diagnostic tests (if appropriate), client education and management are key, as a lot of conditions have no specific treatment. Good management is especially important in controlling the condition and, if lucky, can prevent a recurrence. Unfortunately, it can be the case no diagnosis is made, meaning the condition has to be treated symptomatically.

The immune system is the body's defence against disease-causing microbes (pathogens) and controls how the body defends itself. However, this can result in destructive effects.

In some cases, the immune system will react against substances that typically don't pose a threat to the body, whether inhaled, ingested or contacted. These are known as allergens and, when the body reacts to them, an allergic reaction occurs where the immune system produces IgE antibodies. These antibodies combine with allergens and bind to the surface of reactive cells – mast cells – triggering the release of inflammatory mediators. This reaction usually causes symptoms in the nose, lungs, throat, sinuses, ears, lining of the stomach or on the skin.

Many allergic reactions are mild, while others can be severe and life-threatening, and most reactions happen soon after exposure to the allergen. They can be confined to a small area of the body, or affect it entirely. The most severe form of allergic reaction is anaphylaxis, or anaphylactic shock. This is sudden, severe and occurs within minutes of exposure.

In equine anaphylaxis, drugs are the most commonly implicated trigger and immediate medical attention is needed. Without treatment, it can worsen quickly and lead to death within 15 minutes. While first-time exposure may produce only a mild reaction, the horse is sensitised so repeated

exposures – even if small – may lead to more serious reactions. Most severe allergic reactions occur within seconds or minutes after allergen exposure. Some reactions can occur after several hours – particularly if the causal allergen has been given by mouth.

Sweet itch



Figure 1. Use of a veterinary blanket is still, by far, the most effective sweet itch protection to date and avoids the need to use insecticides, oils or greases, or the need to stable dawn and dusk. Image: © Itchy Horse.

Approximately 5% of equids in the UK suffer from sweet itch. This is a common, well-described allergic dermatitis usually occurring between March and October, reflecting a presence of biting insects, and may affect all equine species. Sweet itch in horses, ponies and donkeys is an allergic response to the saliva in the bite of the *Culicoides* midge – or, to a lesser degree, the black fly, horn fly and stable fly – and gives rise to intense itching.

Also known as summer seasonal recurrent dermatitis, all breeds can be affected, yet some seem more genetically prone, such as Icelandic and cob types, and several genes have, in fact, been identified that make them more susceptible.

After being exposed to the allergen, allergic horses will develop a type-one hypersensitivity reaction, resulting in histamine being produced by the body's immune system. This is a similar mechanism as what happens to humans with hay fever – an “over-the-top” immune reaction to the bite, resulting in immune-mediated production of inflammatory cytokines, causing swelling and intense itching of the skin.

Symptoms

The most common sites for sweet itch to occur are midges' preferred feeding sites. Lesions are often found along the mane and top of the tail, with other areas that can be affected including the

neck, withers, hips, ears and forehead. In severe cases, the mid-line of the belly, saddle area, sides of the head, sheath or udder and legs may also suffer.

Sweet itch sufferers may show signs of restlessness and/or being impatient and moody. Tail swishing and rubbing are also likely, as well as excessive grooming, rolling and self-harming. Horses can also become agitated and head shake when flying insects are around.

Symptoms include severe pruritus, hair loss, skin thickening and flaky dandruff. Exudative dermatitis (weeping sores, sometimes with a yellow crust of dried serum) may also occur and, without attention, can suffer secondary infection.

Diagnosis

Diagnosis of sweet itch, or any other equine skin allergy, is made by a vet via a history, which covers clinical signs, duration, time of year, lesion progression, treatment response, appetite, behaviour, a thorough physical examination, environment, feed and bedding types and use of tests to define causative antigens.

Sweet itch diagnosis is not usually difficult as the clinical presentation and seasonal nature are strong indicators. In severe cases, winter offers no suppression of symptoms before the cycle starts again in spring. However, if a definitive diagnosis is required, tests are available.

Intradermal skin testing, for example, is commonly used to test for IgE responses to known trigger factors in the environment. Culicoides saliva can be included in this test and methods to rule in or out various potential diagnoses include examination of coat brushings/pluckings to rule out presence of other ectoparasites, skin scrapes or full-thickness skin biopsies and bacterial/fungal cultures.

In some cases, provocative exposure can be used. This is where the horse is maintained in an "inert" isolation area until free of symptoms, after which previous environmental materials are reintroduced one by one.

Prevention

No cure exists for sweet itch and once a horse develops the allergy, it can get worse year on year. Treatment mainly depends on managing the condition by the owner, which consists of minimising the risks of an allergic reaction and, therefore, minimising the midges.

One way to carry this out is to move susceptible horses away from wet land near water and woodland, as midges breed in this environment. A windy hillside or coastal site with sea breezes, however, will have fewer midges.

Stabling, meanwhile, should be done at dawn and dusk as this is when midges are at their peak. However, while this is ideal for less severe cases, seriously itchy horses can do untold damage to themselves if in a stable for a short time, so caution must be taken.

A veterinary blanket (**Figure 1**) is still, by far, the most effective sweet itch protection to date and avoids the need to use insecticides, oils or greases or stable at dawn and dusk. Also, a lot of insurance companies will cover the cost of these rugs as part of alternative therapy.

Treatment

No true treatment exists for sweet itch, but management options are available:

- Insect repellent – many are available, but some are more effective, such as those containing permethrin compounds
- Antihistamines – these may bring some relief, but, increasingly, higher dose rates are becoming required, while effects are variable and the horse can become drowsy
- Corticosteroids – these depress the immune system and may bring temporary relief, but side effects can occur, including risk of laminitis
- Lotions – applying soothing creams to irritated skin can bring relief and reduce inflammation, but will not, deter a further midge attack
- Immunotherapy – a wide variety of immunotherapy and desensitisation protocols have been trialled in attempts to reduce or modify the immune response, but with variable success rates

Recurrent airway obstruction



Figure 2. A pony receiving steroids via a nebulizer.

Recurrent airway obstruction (RAO) – also known as chronic obstructive pulmonary disorder, “broken wind” or “heaves” – is a common, performance-limiting, allergic respiratory disease. Horses develop bronchoconstriction and spasm, mucus overproduction and neutrophilic airway inflammation as a result of exposure to specific airborne irritants, such as hay mould and stable dust.

Two different forms are recognised in the horse – barn-associated, often seen in stabled horses fed hay, and summer pasture-associated obstructive pulmonary disease, also called summer heaves and pasture-associated heaves and seen more commonly in horses living on pasture in the south-east.

Symptoms

Symptoms of RAO include flared nostrils, tachypnoea, coughing, nasal discharge and exercise intolerance and respiratory difficulty, resulting in a heave line (a line along the bottom edge of the ribs caused by hypertrophy of the abdominal muscles assisting with breathing). Severe cases may also lose weight and become anorexic.

Auscultation of this condition, meanwhile, also reveals prolonged expiratory phase of respiration, wheezes, tracheal rattle and over-expanded lung fields. Crackling associated with excessive mucus production may also be apparent. Fevers, however, are not normally found unless a

secondary bacterial pneumonia has occurred.

Diagnosis

Diagnosis of RAO is ascertained by a full clinical examination by a vet alongside a full history from the owner. However, further diagnostic tests can be carried out to confirm the lower airway inflammation, such as tracheal wash and thoracic radiographs and ultrasound, which are normally carried out if there is no response to treatment after 14 days.

Prevention

Environmental management plays a key factor in preventing RAO by reducing allergen exposure. For example, horses should have 24-hour turnout where possible and, if not, should instead be stabled with dust-free management. If they are stabled, they should be bedded down on paper/cardboard or rubber matting.

Feed-soaked hay – or a dust-free alternative, such as haylage or steamed hay – is also recommended. The steaming process is thought to eliminate dust and fungal spores that cause respiratory conditions. Feed from the ground also allows for natural drainage from the nasal cavity.

Treatment

Management of RAO is often not good enough, so pharmacological intervention is required.

- Bronchodilators aid in relief of airway obstruction, used in the acute stages of this allergic reaction. Examples include oral clenbuterol in feed or aerosolised salbutamol administered via an inhaler.
- Corticosteroids can be administered orally in feed or via an inhaler (**Figure 2**) and help reduce pulmonary inflammation. These should be used to control this allergic reaction once diagnosed. Care should be taken with these drugs in competition horses, however, as many are forbidden substances under racing and International Federation for Equestrian Sports rules.

Atopy



Figure 3. An allergic reaction of unknown cause. The owner treats this symptomatically. Image: © Lisa Harrison.

Atopy is a genetically linked sensitivity to environmental antigens, such as pollens, mould spores, fragments of insects, storage and dust mites. It is essentially inflammation of the skin (dermatitis). Antigens are airborne and appear to be absorbed both through the skin or nose and mouth, making avoidance often impossible. The main causes are:

- Bacteria and viruses.
- Allergies or sensitivities to insect bites.
- Allergies to chemicals, such as soap or shampoo.
- Exposure to moisture for long periods of time, possibly from standing in muddy fields or wet stalls. Constant moisture penetrates delicate skin, causing inflammation, redness and ulcerations.
- Dirty surroundings, which are an ideal breeding ground for infection.
- Over-bathing – even a monthly bath can be too much for many horses.

Symptoms

Atopy can be characterised by a chronic relapsing itch affecting areas including some or all of the face, flanks, neck, back, legs, axillae or groin. Skin lesions, meanwhile, are mostly caused by self-trauma, varying from mild to severe, and include alopecia, scaling, skin wounds and grazes. In time, skin can also thicken and increase pigmentation and sometimes hives occur, with or without associated itch.

Erythema (skin redness caused by congestion of the capillaries), urticaria (lumpy skin/hives), lichenification (thickened and leathery skin) and hyperpigmentation (skin darkening) can also be present.

Diagnosis

Typically, diagnosis is based on signs and symptoms, but tests are available to make a definitive diagnosis, such as intradermal test (IDT) or serum allergy test. Allergy testing does allow the specific allergen to be identified, meaning a vet or dermatologist could, if appropriate, formulate an allergy vaccine.

In dermatology, it is important to confirm a diagnosis first, rather than treat symptomatically, as, while many diseases look alike, the most appropriate treatment for them will vary markedly depending on the cause.

However, diagnosis is not always possible. The horse in **Figure 3**, for example, came in from the field with this allergic reaction, the cause of which was unknown.

The owner decided to have an IDT, but no specific allergen was confirmed; a common result. Instead, the owner managed the reaction symptomatically with corticosteroids and soothing dermal cream.

Prevention



Figure 4. A dermal reaction where the cause was unknown. Image: © Lisa Harrison.

Prevention of atopy or any dermal disease includes:

- clipping the affected areas to keep the area clean and dry
- avoiding or reducing contact with the allergen, if identified
- avoiding over-washing as this can occasionally aggravate the skin and condition
- avoiding muddy, wet areas

- clean, dry bedding

Treatment

Treatment includes minimising exposure to identified allergens, use of corticosteroids to control the inflammatory reaction and topical agents (shampoos and rinses) to remove allergens. Moisturising of skin, meanwhile, may help partially, while antibiotics may be required if secondary bacterial infection occurs.

Other conditions



Figure 5. A patient that was administered intravenous phenylbutazone (bute). Within an hour, it had developed a dermal reaction to the drug, resulting in urticarial (hives/lumpy skin) all over the body, including the head. Image: © Bonny Millar.

While sweet itch and atopy are the most common equine dermatitis types, others exist. Allergic contact dermatitis, for one, occurs after contact with a specific irritant substance to that equine and, often, straight after direct skin contact. It can be caused by fly spray, shampoos, washing detergent and many other substances.

The key is to eliminate the substance, avoid contact again and treat the area according to veterinary direction, which would normally involve lavaging the area to remove or dilute the substance and treating topically with anti-inflammatories and antibiotics.

Another, urticaria, can be caused by diet or insect bites, but is most commonly caused by drugs, such as phenylbutazone. Appearance of potentially itchy skin lumps/hives, normally across the whole body, can occur in a short period of time. They normally resolve in a couple of hours, if not a day or two, but severe reactions may require treatment with antihistamines and corticosteroids if

symptoms persist or get worst. Avoidance of the substance will eliminate the allergic reaction in the future.

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

Further Reading

- Colahan PT, Mayhew IG, Merritt AM and Moore JN (1999). Integumentary system. In *Manual of Equine Medicine and Surgery*, Mosby, St Louis: 453-455.
- www.dickvetequine.com
- Foster AP and Cunningham FM (1996). The pathogenesis and immunopharmacology of equine insect hypersensitivity. In Kwocka KW, Willemse T and Tschärner CV (eds), *Advances in Veterinary Dermatology 3, Proceedings of the Third World Congress in Veterinary Dermatology*, Butterworth-Heinemann, Edinburgh: 177-189.
- www.globalherbs.co.uk
- www.itchyhorse.co.uk
- Merck (2010). The Merck Veterinary Manual, Merck and Co, Rahway.
- Steinman A, Peer G and Klement E (2003). Epidemiological study of Culicoides hypersensitivity in horses in Israel, *Veterinary Record* **152**(24): 748-751.
- van Grevenhof EM, Ducro B, Heuven HC and Bijma P (2007). Identification of environmental factors affecting the prevalence of insect bite hypersensitivity in Shetland ponies and Friesian horses in The Netherlands, *Equine Veterinary Journal* **39**(1): 69-73.
- Wong D, Buechner-Maxwell V and Manning T (2005). Equine skin: structure, immunologic function and methods of diagnosing disease, *Compendium on Continuing Education for the Practising Veterinarian: North American Edition* **27**(6): 463-473.