

Patient education in the effective management of hay fever

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Abstract

Hay fever, or seasonal allergic rhinitis, is a common condition that affects one in four people in the UK. It is characterised by cold-like symptoms that may include a runny nose, itchy eyes, sneezing and nasal congestion or blockage. Patient education is important in improving patient concordance with treatment regimens and effectively managing hay fever symptoms, and may include advice on ways to avoid pollen. Encouraging patients to start treatment in advance of pollen dispersal, before they experience symptoms, enables optimum management of seasonal allergic rhinitis. Adjunctive treatment, using a nasal douche before applying a nasal corticosteroid spray, is recommended as an aid to nasal hygiene, to improve the efficacy of medication and to reduce allergic inflammation. Often a nasal corticosteroid spray is applied using an incorrect technique, rendering it ineffective. It is important for patients to understand how a nasal corticosteroid spray works and the need for continuous daily treatment using a correct application technique for maximum efficacy of the medication delivered. Standard operating procedures have been developed to demonstrate the effective technique for applying a nasal spray and to improve patients' understanding of the recommended nasal douching treatment.

Keywords

hay fever, hay fever treatment, nasal douching, nasal spray, rhinitis, seasonal allergic rhinitis

THE TERM 'hay fever' is somewhat misleading, because the condition is not related to hay, and it does not cause a fever. Rather, hay fever, or seasonal allergic rhinitis, is a common allergic condition characterised by the annual onset of cold and influenza-like symptoms, which may include:

- » Itchy nose, sometimes also involving itchy ears, throat and eyes.
- » Sneezing.
- » Watery discharge from the nose and sometimes the eyes.
- » Congested or blocked nose.

Allergic rhinitis may be seasonal or perennial. Seasonal allergic rhinitis, or hay fever, is usually caused by outdoor allergens such as pollen or moulds. These trigger symptoms at particular times of the year when plants release pollen or spores at a particular stage of their reproductive cycle in response to favourable weather conditions for pollination or dispersal. Grass pollen is the plant allergen

responsible in approximately nine out of ten affected individuals (ENT UK 2016). Perennial allergic rhinitis is usually caused by indoor allergens, for example, house dust mites, moulds or animal dander, and symptoms occur throughout the year (Allergic Rhinitis and its Impact on Asthma (ARIA) 2010). If a person is allergic to several different types of pollen and moulds their symptoms may be prolonged for several months of the year, appearing persistent in nature. Allergy skin-prick testing is recommended to make the correct diagnosis when the trigger of symptoms is unclear.

One in four people in the UK are affected by hay fever (ENT UK 2016). The Royal College of Physicians (2003) stated that 6% of GP attendances were as a result of allergic rhinitis, while the Royal College of General Practitioners (2014) observed a 114% increase in GP appointments for hay fever and allergic rhinitis symptoms in June 2014 compared to June 2013. This

suggests a rise in the number of patients experiencing allergic rhinitis or seeking treatment for symptoms of this condition.

Causes of hay fever

Pollen is produced by Spermatophyta (seed-bearing) plants, which include herbaceous plants and trees. Other plants, for example ferns and mosses, produce spores or reproduce asexually. Pollen is the male gamete of the plant that needs to reach the stamen, where it can fertilise the female gamete and form seeds for propagation (Bartle and Emberlin 2011).

Entomophilous plants are pollinated by insects. They produce brightly coloured blossom and flowers with scent to attract insects that spread the pollen from plant to plant. Anemophilous plants are wind-pollinated. They include mainly grasses and some trees, and are primary triggers for hay fever symptoms. Insects are not attracted to these plants, so pollination can only be achieved by releasing vast amounts of pollen that is blown by the wind to reach another plant for reproduction. Therefore, it is difficult for people to avoid contact with pollen when it is released. Predisposed individuals become sensitised through repeated exposure and become reactive to the pollen in subsequent years, experiencing symptoms of hay fever (Burr et al 2003). Grass pollen is the primary plant aeroallergen, second only to house-dust mites; it causes 95% of seasonal hay fever symptoms and asthma in the UK (Emberlin 2008).

When a person becomes sensitised to an allergen and subsequently develops allergic symptoms, their body produces immunoglobulin E (IgE) antibodies specific to the allergen that was encountered. In seasonal allergic rhinitis, antibodies are directed to a specific type of pollen or spore. On the next encounter with this allergen, the specific antibodies react to the allergen and inflammatory events occur, releasing chemicals in the tissues. This induces symptoms of rhinitis in the nose, such as sneezing, mucus production and swelling. It may also result in itchy eyes leading to conjunctivitis, as well as itchy ears and throat. These symptoms are repeatedly

stimulated until the trigger pollen or spore is no longer airborne. Therefore, hay fever is typically seasonal. For example, grass pollen is released from May to August (Table 1). The symptoms of irritation often reduce over several years, but nasal congestion and blockage become more significant (Lloyd and Robinson 2007).

Weather conditions affect plants during pollination. Grasses require long hours of daylight and a certain level of warmth. The optimal weather conditions for pollen dispersal are dry, warm, windy days. If the pollen count is high, most people allergic to pollen will experience symptoms. On humid windy days, pollen is held in the air and spreads easily, whereas on rainy days pollen will be cleared from the air. On still, sunny days, the pollen count is highest in the early morning and again in the evening, since the pollen rises with warm air and falls as it cools from the atmosphere. These times correspond to the times when individuals with hay fever are most likely to experience symptoms. There will be days with dry periods when conditions are suitable for pollen to be released, which will trigger symptoms even if the summer weather is not consistently sunny (Met Office 2014).

Effects of allergic rhinitis

Rhinitis and asthma commonly occur as co-morbidities. Bourdin et al (2009)

TABLE 1. UK pollen season calendar

Type of pollen or spore	Season
Tree pollen	
Late winter/early spring	January - March
» Hazel	
» Alder	
Late spring	
» Elm	March - May
» Birch	
» Ash	
Late spring/early summer	April - June
» Oak	
Grass pollen	May - July (peak levels in June and July)
Weed pollen	June - August
Mould spores	September - October

(Bartle and Emberlin 2011, ENT UK 2016)

indicated that asthma is present in 20-50% of all patients with rhinitis. Allergic rhinitis and asthma have been described as two conditions representing manifestations of one nosological entity in two different parts of the respiratory tract (Togias 2003). Moreover, 75-80% of patients with asthma also have rhinitis; when their rhinitis is treated this improves their asthma (Scadding et al 2008).

The nose functions as a filter to clean, warm and moisturise air entering inside the respiratory tract. The mucous membranes produce mucus. This, together with the nasal hairs, traps airborne substances, including pollen. The nasal hairs then move the mucus to the back of the nose and pharynx to be swallowed (Watelet and Van Cauwenberge 1999). When the nose is stimulated by the effects of allergic rhinitis and excessive mucus is produced, this can lead to 'unsocial behaviour', such as sneezing, frequent nose wiping and sniffing or coughing when mucus passes down the back of the throat. This may result in an inability to concentrate, sleep disturbance and tiredness. When the nose becomes

blocked it can also affect an individual's hearing and taste, and may alter the sound of their voice. These symptoms may cause considerable distress to an individual, reducing their quality of life and general wellbeing (Juniper and Lund 2001).

Walker et al (2007) studied the detrimental effect of hay fever symptoms on the examination performance of teenagers in the UK. The examination period clashes with the peak pollination period and many people consider it should be moved to another time in the year. Symptoms inappropriately treated using sedating antihistamines can add to the detrimental effect of hay fever symptoms by increasing drowsiness and reducing concentration, which may lead to poor performance and result in lower grades (Walker et al 2007).

Patient education and treatment

If rhinitis and asthma occur as co-morbidities, it is recommended that they are treated together (ARIA 2007). Guidelines on the treatment of rhinitis support the concept of 'one airway – one disease', and emphasise the importance of treating the whole airway (Scadding et al 2008). The public and many healthcare professionals may not recognise the significant effects of hay fever symptoms on those with the condition, and the need to treat the inflammatory response to seasonal allergy. Guidelines are available on hay fever to support healthcare professionals and patients to be prepared in advance of the pollen season (ARIA 2007, Scadding 2008). Patients may be provided with advice on ways to avoid pollen (Box 1) (ENT UK 2016). Patient education about treatment regimens is also important in improving concordance and managing hay fever symptoms effectively.

The regular pattern of seasonal symptoms enables self-diagnosis, and many people will self-medicate using over-the-counter medications, for example, antihistamine tablets, syrups, nose sprays and eye drops (Table 2). Non-medicated treatments include saline sprays, douches and preparations to block pollen from reaching the nasal mucous membranes (Table 3). These treatments may also be used by people

TABLE 2. Over-the-counter hay fever medications

Symptom	Medication	Examples
Blocked nose	Nasal corticosteroid sprays: » The most effective treatment for nasal symptoms. » Can reduce eye symptoms » Can be used with eye drops and antihistamine medication.	Fluticasone. Beclomethasone.
Itchy eyes Watery eyes	Eye drops. Chromone eye drops. Antihistamine tablets or syrups and/or nasal sprays.	Sodium cromoglicate. Loratidine or cetirizine.
Itchy nose. Runny nose.	Antihistamine tablets or syrups and/or nasal sprays.	Loratidine or cetirizine. Azelastine.

(ENT UK 2016, with permission)

TABLE 3. Non-medicated treatment for hay fever symptoms

Symptom	Function	Product
Itchy or runny nose	Nasal barrier.	Cellulose powder spray.
Itchy or runny nose	Nasal filter.	Nasal air filter, for example.
Itchy nose or mucus build-up	Nasal wash.	Saline nasal spray or wash.

who are concerned about the side effects of medication, for example pregnant women and athletes (Emberlin 2010).

Allergy skin-prick testing

Allergy skin-prick testing can be used to identify the allergens responsible for allergic responses and is useful in the diagnosis and treatment of hay fever. It involves placing drops of liquid containing small amounts of each potential allergen on the skin. A lancet is then used to prick the skin underneath going through each drop of liquid. If a person has a histamine response to a particular drop, this indicates that they are allergic to this allergen or allergens. In people with hay fever, this information can be used to determine the time of year a person's symptoms are likely to start (Table 1).

Antihistamines

Antihistamines are usually the first medication considered for patients with hay fever. They may be either purchased over-the-counter or prescribed by the GP when symptoms start. Antihistamines can reduce symptoms of sneezing and watery discharge from the nose and eyes in the initial phase of an allergic reaction. However, they are not effective in reducing late-phase reactions resulting in nasal congestion and blockage.

Nasal corticosteroid sprays

Intranasal corticosteroid treatment is recommended to reduce allergic inflammation. Applying a nasal corticosteroid spray before the onset of symptoms suppresses the inflammatory response of the allergic reaction, and programmes the body in advance to reduce the inflammatory response after contact with the pollen. This pre-onset use of a steroid nasal spray ensures its effectiveness when symptoms are triggered.

It is important for the patient to realise that nasal corticosteroid sprays do not work immediately. A patient will often stop the treatment when a medication does not reduce symptoms in a short time, which may result in their symptoms worsening. Therefore, it is important to explain to patients that it may take up to 2 weeks before the benefits

of the nasal corticosteroid spray take effect (Scadding et al 2008, BSACI 2013). Once symptoms are controlled, it is important to continue using the nasal corticosteroid spray to maintain the beneficial effect. The dose can be reduced once symptoms are controlled, but the medication should not be stopped while the trigger allergen is still airborne. It is important for the patient to understand that if medication is stopped while the trigger pollen is still airborne, their symptoms will return, often with greater severity, and may be more difficult to control.

There are various brands of nasal corticosteroid sprays available and they are all considered to have a similar efficacy. If one brand is not effective, it is advisable to try another and ensure patient concordance with the application regimen. Systemic absorption of nasal corticosteroid sprays depends on the bioavailability of the drug. A nasal corticosteroid spray with low systemic bioavailability should be used if it is to be taken for extended periods (Table 4). Patients self-treating with over-the-counter medications are often apprehensive about using a steroid-based nasal spray; they should be reassured about their safety and effectiveness when this type of spray is used regularly (Salib and Howarth 2003).

Often nasal sprays are applied incorrectly, which stops the medication from being effective. The spray should

Box 1. Ways to avoid pollen

- » Be aware of the pollen count.
- » Avoid the countryside when the pollen count is high.
- » Keep your windows shut when travelling in a car and ensure your car has a pollen filter.
- » Avoid being outdoors at times when the pollen count is high, for example, when the air is warming in the mornings and cooling in the evenings.
- » Keep your bedroom windows closed in the early morning and evening when the pollen concentration is high.
- » Hide your pillow under the bed covers during the day to prevent pollen from settling on it when the windows are open.
- » Wear glasses to protect your eyes from pollen when outside.
- » Wash your face and hair and change your clothes when coming indoors on days when the pollen count is high.
- » Wipe petroleum jelly around your nose and eyes to trap pollen and reduce the amount entering your nose and eyes.
- » Consider using a nasal air filter.
- » Carry out nasal douching.

(ENT UK 2016, with permission)

remain inside the nose after it is applied; however, the bottle is often angled incorrectly and the spray is sniffed too hard. This means that the medication goes straight to the back of the throat, missing the structures it needs to programme. When the spray reaches the back of the throat, it is swallowed and destroyed by gastric enzymes, making it ineffective. To gain maximum efficacy from their medication, it is important for patients to understand how a nasal corticosteroid spray works, the need for continuous daily treatment and the correct application technique. The BSACI Nurses in Allergy Group (2013) have developed a standard operating procedure on how to use a nasal spray correctly to reduce ineffective use of nasal corticosteroids (www.bsaci.org/guidelines/SOPs).

Nasal douching

The British Society for Allergy and Clinical Immunology (BSACI) recommend nasal douching before the application of a nasal corticosteroid spray (Scadding et al 2008). Nasal douching, or nasal irrigation, is a non-medicated, safe and simple system of rinsing the nasal passages to wash

away excess mucus and irritants. A nasal douche washes out the nose and cleanses the mucous membranes. It removes mucus that may form a film and prevent the nasal treatment spray from contacting the lining of the nose (Tomooka et al 2000).

Using a nasal douche as a sole or adjunctive treatment can reduce nasal symptoms where infection and allergy have been identified (Scadding 1998). It is often used as a first-line treatment for allergic rhinitis, particularly during the pollen season, and can be used by all age groups. Sinonasal disease can lead to damage of the mucociliary transport system in the nose. Research has shown that mucus contains inflammatory mediators and that when its transportation through the nose becomes slow due to poor ciliary function, inflammation can increase. Nasal douching is considered beneficial in removing thickened mucus and thereby reducing inflammation (Pynnonen 2007), which is the aim of allergic rhinitis treatment.

The BSACI: Nurses in Allergy Group (2014) have produced a standard operating procedure document to improve the knowledge supporting nasal douching and its performance (www.bsaci.org/guidelines/SOPs).

TABLE 4. Nasal corticosteroid sprays

Generic name	Can be prescribed	Bioavailability
Beclometasone dipropionate	For ages over 6 years: two sprays each nostril twice daily.	44%
Budesonide	For ages over 12 years: two sprays each nostril twice daily.	31%
Fluticasone with azelastine	For ages over 12 years: one spray per nostril twice daily.	1.86%
Fluticasone propionate Fluticasone furoate	For ages over 12 years: two sprays each nostril every day or twice daily. For children aged 4-11 years: one spray each nostril every day up to twice daily.	0.42%
Mometasone furoate	For ages over 12 years: two sprays each nostril every day up to four sprays. For children aged 6-11 years: one spray each nostril every day up to twice daily.	0.46%
Triamcinolone acetonide	For ages over 12 years: two sprays each nostril daily For children aged 6-11 years: one spray each nostril every day up to twice daily. For children aged 2-6 years: one spray each nostril every day.	46%

(British Society for Allergy and Clinical Immunology: Nurses in Allergy Group 2013)

Nasal decongestant sprays

Nasal decongestant sprays have been found to be effective in reducing nasal congestion, but may have a detrimental effect when continued for long periods. They can be used for up to 5 days on occasions when nasal blockage is difficult to manage. This will relieve congestion and allow a corticosteroid spray to be applied inside the nose. However, if used regularly a decongestant will induce a rebound congestion, known as rhinitis medicamentosa, causing increased swelling inside the nose when the spray is stopped. Therefore, it is important that patients understand this side effect and how a decongestant can be used for short periods to support concordance with a nasal corticosteroid spray, but is not appropriate for continuous use.

Immunotherapy

Some patients experience severe hay fever symptoms that cannot be controlled

by topical medication. Oral steroids can be prescribed for short periods in such cases; however, these patients may require allergen-specific immunotherapy. Immunotherapy, or desensitisation, is a treatment carried out over 3 years at specialist centres. It is administered by a series of injections (subcutaneous immunotherapy), or by daily medication under the tongue (sublingual immunotherapy). Medication is given in doses of increasing strength to cause changes in the immune system.

Not every patient is suitable for this treatment, particularly those with multiple allergies or severe asthma. Immunotherapy is an expensive treatment and requires commitment from the patient to adhere to its protocols. This treatment is used in Europe. However, it is not widely available in the UK and topical medications are seen as more cost effective for the majority of patients (Walker et al 2011).

Conclusion

Much has been written about hay fever and recommended treatments, with several resources offering patient information. The BSACI guidelines on rhinitis (Scadding et al 2008) offer advice to support healthcare workers in understanding and treatment of persistent and seasonal symptoms of allergic and non-allergic rhinitis. The ARIA (2010) guidelines also provide important information on diagnosis and classification of persistent or intermittent rhinitis ensuring tailored treatment for presenting symptoms. Patient concordance with the medication they have been prescribed or recommended is one of the most important factors in the management of hay fever. Patient education is essential in improving concordance, and nurses should ensure the patient understands the treatment regimen. The symptoms of hay fever can be managed better if treatment is started early, before the pollen that patients are allergic to is dispersed and airborne.

USEFUL RESOURCES

ENT UK (2016) Patient information leaflet: About Hayfever.

<https://entuk.org/patient-information-leaflets-1>

Patient Information on hay fever.

www.patient.co.uk/health/hay-fever

Met Office (2016) Hay fever.

www.metoffice.gov.uk/health/public/pollen-forecast/hay-fever

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