

## UNIT NO. 4

## ALLERGIC RHINITIS

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## ABSTRACT

**Allergic rhinitis is an IgE-mediated inflammatory response of the nasal membranes induced by allergen exposure. It has previously been classified as seasonal, perennial and occupational. Typical symptoms of allergic rhinitis include sneezing, rhinorrhoea, itching and nasal blockage. The approach to the treatment of allergic rhinitis is broadly categorized into allergen avoidance, pharmacotherapy and immunotherapy.**

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## INTRODUCTION

Allergic rhinitis is an IgE-mediated inflammatory response of the nasal membranes induced by allergen exposure. This response causes symptoms which include rhinorrhoea, nasal obstruction, nasal itching and sneezing.

It is a common condition and has been estimated to affect at least 10 – 25% of the population worldwide. A study of the epidemiology of chronic rhinitis in Singapore showed that the prevalence of allergic rhinitis was about 5.5% of the study population.<sup>1</sup> Wang et al reported a prevalence of 13.1% of rhinitis in Singapore based on the definition used by the International Consensus Report where patients should have at least 2 nasal symptoms.<sup>2</sup>

## CLASSIFICATION OF ALLERGIC RHINITIS

Allergic rhinitis has previously been classified as seasonal, perennial and occupational. This was based on the period of exposure to the allergens and may not be adequate to describe the various situations that may trigger the symptoms.

A new classification which uses symptoms and quality of life parameters and based on duration was proposed by the ARIA workgroup.<sup>3,4</sup> It is classified as intermittent or persistent depending on the duration of symptoms and subdivided into mild or moderate-severe based on severity of symptoms and its impact on quality of life (Table 1).

A patient is said to have intermittent allergic rhinitis if his symptoms occur less than 4 days per week or for a total duration of less than 4 weeks. Those with persistent allergic rhinitis have symptoms which occur 4 or more days a week and for a duration of 4 weeks or longer.

TABLE 1. Classification of Allergic Rhinitis

Intermittent	Symptoms < 4 days per week or < 4 weeks
Persistent	Symptoms ≥ 4 days per week and ≥ 4 weeks
Mild	<ul style="list-style-type: none"> <li>- normal sleep</li> <li>- normal daily activities, sports, leisure</li> <li>- does not interfere with work or school performance</li> <li>- no troublesome symptoms</li> </ul>
Moderate-Severe	One or more items: <ul style="list-style-type: none"> <li>- abnormal sleep</li> <li>- impairment of daily activities, sports, leisure</li> <li>- problems caused at work or school</li> <li>- troublesome symptoms</li> </ul>

## DIAGNOSING ALLERGIC RHINITIS

Typical symptoms of allergic rhinitis include sneezing, rhinorrhoea, itching and nasal blockage. Patients also commonly have associated allergic conjunctivitis. A diagnosis of allergic rhinitis is made when the patient has 2 or more of the above symptoms lasting for more than 1 hour on most days.<sup>5</sup> Rhinosinusitis, on the other hand, is characterized by the presence of nasal congestion, nasal discharge (including postnasal drip), facial pain or pressure and a reduction or loss of smell.<sup>6,7</sup>

Diagnostic test, such as the skin prick test, is useful in demonstrating the presence of an IgE mediated reaction to specific allergens that are used for the test. The results obtained are equivalent in value to those that measure allergen-specific IgE in serum. These tests are not essential in making a diagnosis of allergic rhinitis but can help clinicians determine whether the patient's nasal symptoms are allergic in origin.

## TREATMENT OF ALLERGIC RHINITIS

The approach to the treatment of allergic rhinitis is broadly categorized into allergen avoidance, pharmacotherapy and immunotherapy.

Allergen avoidance is perhaps the most effective form of treatment in theory but may be difficult to implement in practice. Patients who have allergy to house dust mite should be advised to carry out measures that will help reduce exposure to them. Feather pillows and woolen blankets should be replaced with synthetic ones and should be washed weekly at 60°C. The population of house dust mites can also be reduced by the following measures: use of allergen-impermeable mattress and pillow covers, removing all carpets, reducing the humidity of the environment and the use of chemical agents known as acaricides which kill dust mites.

Those found to have allergies to their pets should have them removed or to limit their exposure to a minimum. Individuals who cannot bear to part with their pets will have to bathe their pets regularly and should not allow the animals into their bedroom at any time.

Pharmacotherapy has the advantage of being safe, effective and easy to administer. There are several types of pharmacological agents which can be used in the treatment of rhinitis and they can be categorized into the following groups: antihistamines, corticosteroids, chromones, anti-cholinergics and decongestants

### Antihistamines

Antihistamines act by blocking the histamine activity at the H<sub>1</sub> receptor sites and hence reduce the symptoms of an acute allergic reaction. The first generation antihistamines are lipophilic and can cross the blood-brain barrier easily, thus giving undesirable central nervous system side effects such as drowsiness and impaired performance.

The new generation antihistamines are relatively lipophobic and highly protein bound. They are preferred for their efficacy and safety, as well as their favourable pharmacokinetics. They act rapidly and should reduce nasal and ocular symptoms within an hour. Intranasal and intraocular antihistamines are also reported to be rapidly effective and can be used in place of oral antihistamines.

### Corticosteroids

Corticosteroids can be delivered by intranasal sprays or given systemically via an oral or parenteral route. Due to the possible side effects of prolonged use of corticosteroids, intranasal corticosteroids should replace oral or systemic corticosteroids whenever possible. The efficacy of intranasal corticosteroids is well published and is proven to be the most effective pharmacological treatment in the symptomatic control of allergic rhinitis. Intramuscular or intranasal injection of glucocorticosteroids is not usually recommended due to the possible occurrence of systemic and occasionally severe side effects.

### Chromones

Chromones like sodium cromoglycate act by inhibiting the degranulation of mast cells and thus prevents the release of histamine and other chemical mediators of allergy. They are effective if used prophylactically and has to be started early because of the delayed onset of effect. It has the disadvantage of having to be applied at least 4 times per day due to its short duration of action.

### Anti-cholinergics

Intranasal anti-cholinergics such as ipratropium bromide have

been shown to be effective in the control of watery rhinorrhoea but have no effect on nasal blockage, sneezing or itching.

### Decongestants

Nasal decongestants act on  $\alpha$ -adrenergic receptors to cause vasoconstriction but do not have any effect on rhinorrhoea, sneezing or itching. They can be applied topically or taken orally. Prolonged use of topical nasal decongestants can cause rebound rhinitis also known as rhinitis medicamentosa. The induced vasoconstriction is thought to cause partial ischaemia that leads to the accumulation of the products of metabolism. A rebound vasodilatation occurs because these chemicals are potent vasodilators. In addition, down regulation of  $\alpha$ -adrenergic receptors is believed to occur with prolonged use of topical decongestants making them less sensitive to vasoconstrictors.

It is recommended that pharmacotherapy of allergic rhinitis be based on the classification and severity of the disease. Those with mild intermittent allergic rhinitis should be treated with oral or intranasal antihistamines. Nasal decongestants can also be added when necessary. Those with moderate to severe intermittent symptoms or mild persistent symptoms can start with oral or intranasal antihistamines or intranasal corticosteroids.

Patients with persistent moderate to severe allergic rhinitis should be started on intranasal steroids as first line treatment. Doses can be stepped down and stopped eventually if there is improvement of symptoms. There may be a need to review the compliance or management strategy if the symptoms fail to improve.<sup>8</sup> Addition of antihistamines may help improve control or itch or sneezing while control of nasal blockage can be enhanced by short term use of nasal decongestants or oral corticosteroids.

There are special considerations when treating allergic rhinitis in the elderly. Allergy is a less common cause of persistent rhinitis in those above the age of 65 years and there may be physiological changes in the vasculature of the nose which can play a bigger role in causing chronic rhinitis in the elderly. In addition, some drugs may induce specific side effects in elderly patients; for example decongestants and drugs with anticholinergic activity may cause urinary retention in patients with prostatic hypertrophy

The principles of treatment of allergic rhinitis in children are the same as for adults except that the doses have to be adjusted in accordance to their body weight. Intranasal corticosteroids are effective and some have been shown not to affect growth if given in the recommended doses.<sup>9,10,11</sup>

There is a close association between asthma and allergic rhinitis and it has been recommended that the 2 conditions be treated in combination wherever possible. Allergic rhinitis is a risk factor for asthma and those with persistent allergic rhinitis should be evaluated for asthma by history, physical examination and, if possible, by the assessment of airflow obstruction before and after a bronchodilator.

## Immunotherapy

Immunotherapy has been shown to be effective in the treatment of allergic rhinitis and acts by modifying the immune response to a specific antigen. It is indicated in patients who have failed conventional pharmacotherapy or who have significant side effects from it. Immunotherapy is contraindicated in patients with autoimmune disease, uncontrolled asthma, unstable coronary artery disease, those on beta-blockers and children under 5 years of age. Pregnancy is a relative contraindication for immunotherapy and maintenance immunotherapy can be continued during pregnancy. However, immunotherapy should not be initiated during pregnancy as there is a risk of anaphylaxis.<sup>12</sup>

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## LEARNING POINTS

- **Allergic rhinitis is a common condition and affects a significant proportion of the population.**
- **It is best classified according to the duration and severity of the symptoms.**
- **Treatment is by allergen avoidance and pharmacotherapy with immunotherapy in reserve.**
- **Allergic rhinitis is closely related to asthma and the 2 conditions should be treated in combination wherever possible.**