

Difference Between Allergic and Nonallergic Rhinitis

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Key Difference – Allergic vs Nonallergic Rhinitis

Rhinitis is the **inflammation** of the nasal mucosa. It is an upper respiratory tract disorder. Excessive mucus production, congestion, sneezing paroxysm, watery eyes, nasal and vocal pruritus are the clinical symptoms of rhinitis. **In allergic rhinitis, the symptoms are triggered by an allergen. In contrast, nonallergic rhinitis is not triggered by an allergen, and there are no associated hypersensitive reactions.** This is the key difference between allergic and nonallergic rhinitis.

What is Allergic Rhinitis?

Allergic rhinitis is defined as nasal discharge or blockage and sneezing attacks that last for more than an hour due to an allergen. It can be of two types: seasonal or intermittent rhinitis, which occurs during a limited period of the year, and perennial or persistent rhinitis, which occurs throughout the year.

Pathophysiology

IgE antibodies are produced against the allergen by the **B cells**. IgE then binds to the mast cells. This cross-linking leads to the degranulation and the release of chemical mediators such as histamine, prostaglandin, leukotrienes, cytokines and proteases (tryptase, chymase). Acute symptoms like sneezing, pruritus, rhinorrhea and nasal congestion are caused by these mediators. Sneezing may occur within few minutes from the entry of an allergen into the nasal cavity, and it is followed by an increase in the nasal secretions and blockage which are due to the action of histamine. Furthermore, **eosinophils, basophils, neutrophils** and **T lymphocytes** are recruited to the site by the antigen presentation to the T cells. These cells cause irritation and **edema**, resulting in the nasal obstruction.

Seasonal Allergic Rhinitis

Seasonal rhinitis, which is also known as the hay fever, is one of the commonest allergic disorders with prevalence rates exceeding 10% in some parts of the world. Sneezing, nasal irritation and watery nasal secretions are the common clinical

features. But some patients may also suffer from itching of the eye, ear, and soft palate.

Tree pollens, grass pollens, and mold spores are the usual culprits that act as the allergens to provoke the immune system. Seasonal allergic rhinitis may occur at different times of the year in different regions, mainly because of the variation in the pattern of pollination.

Perennial Allergic Rhinitis

About 50% of the patients with perennial rhinitis may complain of sneezing or watery rhinorrhea, and others usually complain of nasal blockage. These patients may also have eye and throat symptoms.

Inflammatory mucosal swellings can obstruct the drainage of secretions from the [sinuses](#), leading to [sinusitis](#).

The most common allergen causing perennial allergic rhinitis is the fecal particles of house dust mite, *Geratophagoides pteronyssinus* or *D. farinae*, which are invisible to the naked eye. These mites are found in dust all over the house especially in damp places. The highest concentration of mites is found in human beddings. Next commonest allergen is the proteins derived from urine, saliva or skin of domestic pets, especially the cats. Perennial rhinitis makes the nose more responsive to nonspecific stimuli like cigarette smoke, household detergents, strong perfumes, washing powder and traffic fumes.

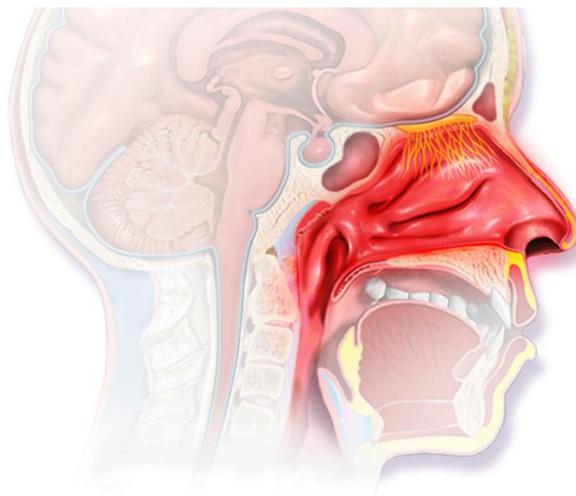


Figure 01: Allergic Rhinitis

Investigations and Diagnosis

History of the patient is important in identifying the allergen. Skin prick test is useful, but it is not a confirmative test. Allergen specific IgE antibody levels in the blood can be measured, but it is expensive.

Treatments

- Allergen avoidance
- H₁ antihistamines- commonest therapy (ex: Chlorphenamine, Hydroxyzine, Loratidine, Desloratadine, Cetirizine, Fexofenadine)
- Decongestants
- Anti-inflammatory drugs
- Corticosteroids- most effective
- Leukotriene

What is Nonallergic Rhinitis?

Any nasal condition with the symptoms of allergic rhinitis but whose etiology is unknown is defined as the nonallergic rhinitis.

Causes

Several internal and external factors may cause nonallergic rhinitis.

External factors include,

- Viral infections(cold) which attack the lining of the nasal cavity and the throat
- Environmental factors like high temperature, humidity, exposure to noxious fumes

Internal factors include,

- Hormonal imbalance
- Hormonal replacement therapy or hormonal contraception

Common Cold (Nonallergic Rhinitis)

A variety of respiratory viruses such as rhinovirus, coronavirus, and adenovirus can cause this highly infectious illness. Among them, rhinovirus is the commonest causative agent. Since the rhinovirus has several serotypes, it is not possible to design a vaccine against the virus. The disease characteristics are limited to the upper respiratory tract because the virus grows well at 33°C which is the local temperature of the upper respiratory tract. The transmission is mainly through close personal contact (nasal mucus on hand) or respiratory droplets. Overcrowding and poor ventilation facilitate the spread of the infection.

Signs and Symptoms

- Tiredness
- Slight pyrexia
- Malaise
- Sneezing
- Profuse watery nasal discharge



Figure 02: Nonallergic Rhinitis

Treatment

Nonallergic rhinitis is usually a self-limiting condition. The choice of treatment options depends on the severity of the disease. Rinsing the nasal passage or a nasal spray of corticosteroids may relieve the symptoms.

What are the similarities between Allergic and Nonallergic Rhinitis?

- In both allergic and nonallergic rhinitis, the nasal mucosa is inflamed.
- Both allergic and nonallergic rhinitis have a common set of symptoms.

What is the difference between Allergic and Nonallergic Rhinitis?

Allergic vs Nonallergic Rhinitis	
Allergic rhinitis is defined as nasal discharge or blockage and sneezing attacks that last for more than an hour on most days due to an allergen.	Any nasal condition with the symptoms of allergic rhinitis but whose etiology is unknown is defined as the nonallergic rhinitis.
Cause	
This is caused by an allergen.	Nonallergic rhinitis is caused by the action of a pathogen such as a rhinovirus.

Summary – Allergic vs Nonallergic Rhinitis

As their names suggest, the main difference between allergic and nonallergic rhinitis is their cause; allergic rhinitis is caused by an allergen whereas nonallergic rhinitis is caused by the action of a pathogen. None of the various forms of rhinitis are caused by bacteria. Therefore taking antibiotics when you have a runny nose is futile and in the long run, it can lead to the development antibiotic resistance. The indiscriminate use of antibiotics without the professional advice should be discontinued if we are to prevent the emergence of new strains of microbes that can withstand even the most potent antimicrobial drugs.

Reference:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009. Print.

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1. "Sneeze" by Tina Franklin ([CC BY 2.0](#)) via Flickr
2. "Blausen 0015 AllergicRhinitis" By Blausen.com staff (2014). "Medical gallery of Blausen Medical 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. – Own work ([CC BY 3.0](#)) via [Commons Wikimedia](#)

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