



Allergic Rhinitis: Impact on Quality of Life

Nuhi A*, Jintu A, Amresh K and Harinderjit S

Adesh Institute of Pharmacy and Biomedical Sciences, India

Abstract

Besides its usual symptoms, allergic rhinitis has a substantial negative influence on one's physical and emotional well-being as well as social and mental interactions and overall Quality of Life (QOL). Environmental causes and changes in lifestyle are contributing to its rising global incidence. Nasal congestion symptoms can make it difficult to sleep, wear you out, and interfere with everyday activities, especially when they coexist with other disorders like asthma. Studies have demonstrated the efficacy of medication and variations in prevalence according to gender. This research attempts to assess the effects of allergic rhinitis on quality of life in detail. Pharmacotherapy and avoiding allergens are the best forms of treatment. When appropriate, targeted symptom control with immunotherapy and an assessment for allergic rhinitis should be taken into account. Patients with allergic rhinitis are treated with decongestants, immunotherapy, anticholinergic drugs, corticosteroids, and antihistamines. The most effective and often used drugs are these antihistamines and intranasal corticosteroids. Studies have shown that people with allergic rhinitis who take both of these drugs experience improvements in their quality of life. The disease's overall burden extends beyond functional limitations in the body and society. It also has a financial impact, which increases when we take into account the data suggesting that allergic rhinitis may be the cause of comorbid conditions like sinusitis and asthma. The most common symptom, nasal blockage, is linked to sleep difficulties, which can have a significant impact on behavior, learning, mental health, and attention.

Keywords: Allergic rhinitis; Quality of life; PAR; SAR

Introduction

The symptoms of allergic rhinitis, a common chronic inflammatory disease that affects the nasal passages and nasal cavity and is brought by an IgE-mediated type 1 hypersensitivity reaction to a particular allergen, are not limited to nasal congestion, sneezing, rhinorrhea, and itching. Their academic or professional aspirations, social relationships, emotional well-being, and physical health are all greatly impacted by this medical condition, which also has a considerable impact on their overall quality of life [1-4]. It is commonly referred to as weariness and headaches [5].

The Quality of Life (QOL) is known to be negatively impacted by AR, to a degree that is even equivalent to other serious respiratory illnesses [6].

Both (PAR) Perennial Allergic Rhinitis and (SAR) Seasonal Allergic Rhinitis, such as dust, animal dander, cockroach droppings, and molds, can cause allergic rhinitis [7].

The signs and symptoms of the AR include:

- Mouth breathing
- Snoring
- Sneezing
- Itching
- Postnasal Drip (PND)
- Wet eyes
- Loss of taste and smell

As AR symptoms can be so uncomfortable, they can negatively impact daily activities including working, performing well on exams, enjoying life, and maintaining psychological well-being. Moreover, the symptoms of the patients cause decreased productivity when they attend work, an extremely serious problem known as "presenteeism." Studies on the socioeconomic cost of lost production have revealed that depression and anxiety are among the most common reasons people

OPEN ACCESS

*Correspondence:

Nuhi Altaf, Adesh Institute of Pharmacy
and Biomedical Sciences, India, Tel:
9682603367;

Received Date: 04 Sep 2024

Accepted Date: 04 Oct 2024

Published Date: 17 Oct 2024

Citation:

Nuhi A, Jintu A, Amresh K, Harinderjit
S. Allergic Rhinitis: Impact on Quality
of Life. *Ann Pulm Res Med.* 2024; 2(1):
1007.

Copyright © 2024 Altaf Nuhi. This is an
open access article distributed under
the Creative Commons Attribution
License, which permits unrestricted
use, distribution, and reproduction in
any medium, provided the original work
is properly cited.

miss work, especially in the spring [8].

According to a number of studies, moderate-to-severe forms of AR are associated with a higher risk of exhaustion, obstructive sleep apnea, memory impairment, and sleep disorders (nocturnal awakening and insomnia) [9].

Prevalence

Over 400 million individuals globally suffer with allergic rhinitis, and industrialized countries, particularly nations where people speak English, have high rates of the condition [10]. Up to 40% of children and 10% to 30% of adults suffer from allergic rhinitis. A frequent health issue that affects 10% to 25% of the population worldwide is allergic rhinitis. According to a study done in India, 30% of people have allergic rhinitis. In Delhi, India, the prevalence of allergic rhinitis is said to range between 10% to 13%. In India, 80% of adults with asthma and 75% of children reported having rhinitis symptoms [11].

Diagnosis

Through history and physical examination are the cornerstones of establishing the diagnosis of allergic rhinitis. Allergy testing is also important for confirming that underlying allergies cause the rhinitis. During the history, patients will often describe the following classic symptoms of allergic rhinitis: Nasal congestion, nasal itch, rhinorrhea and sneezing. Allergic conjunctivitis (inflammation of the membrane covering the white part of the eye) is also frequently associated with allergic rhinitis and symptoms generally include redness, tearing and itching of the eyes. An evaluation of the patient's home and work/school environments is recommended to determine potential triggers of allergic rhinitis. Common and possibly relevant allergens such as pollens, furry animals, textile carpeting and fabric upholstery, tobacco smoke, humidity levels at home, and other potentially harmful substances that the patient might be exposed to at work or at home should be the primary focus of the environmental history. The patient should also be questioned about any family history of atopic disease, how symptoms affect their quality of life, and whether they coexist with any conditions like asthma, mouth breathing, snoring, sleep apnea, sinus involvement, otitis media (middle ear inflammation), or nasal polyps. It's crucial to record the frequency and length of "colds" since patients may mistake chronic nasal symptoms for a "constant cold" [12].

Diagnostic procedures such as nasal endoscopy and radiographic investigation play a crucial role in evaluating sinus ventilation, identifying any polyp formation obstructing the osteomeatal complex, and assisting in the decision-making process regarding the best course of treatment. Patients with difficult-to-treat allergic diseases may require specific Immunoglobulin E (IgE) antibodies, which can be confirmed by skin testing or *in vitro* Radioallergosorbent (RAST) testing to which a person has been sensitized [13].

Methacholine-induced airway hypersensitivity tests showed a significant increase after allergen exposure, as well sputum eosinophils and monocyte count that were much higher. In the sputum of BAC+ patients with and without atopy, significant increases were also found in eosinophils, monocytes, and ECP, but not in BAC-patients' sputum [14].

Pathophysiology

In allergic rhinitis, exposure to allergens like dust mites, animal dander, and pollens triggers an inflammatory response in the nasal lining. Mast cells, T cells, B cells, macrophages, and eosinophils

infiltrate the area. T helper 2 (Th2) cells release cytokines that stimulate IgE production by plasma cells. IgE binds to mast cells, leading to the release of histamine and leukotrienes, causing symptoms like itching, rhinorrhea, and mucous secretion. This initial response is followed by a late-phase inflammatory response, causing recurrent symptoms, mainly nasal congestion [12].

Management

The goal of treating allergic rhinitis is to make patients' symptoms better and their quality of life greater. Management guidelines for allergic rhinitis have been developed by the British Society for Allergy and Clinical Immunology. There are numerous approaches that vary when avoiding allergens. Avoiding irritants like smoke and traffic pollution is advised since they might exacerbate allergic rhinitis. It is advisable to avoid pets if a patient is stimulated by them. Other recommendations include keeping your home clean overall, washing stuff at a higher temperature, and keeping pets out of the bedroom. Both active and passive exposure to secondhand smoke can have a particularly negative impact on children and adolescents, increasing their chance of developing allergic disorders like food allergies, allergic dermatitis, and allergic rhinitis [15].

Non-pharmacological treatment includes:

- Allergen-specific immunotherapy
- Subcutaneous or sublingual immunotherapy
- Nasal saline irrigation
- Environmental management techniques
- Companion animal management
- Nasal turbinate surgery [6]

Experts from the WHO advise that individuals with chronic allergic rhinitis should be checked for bronchial asthma. Achieving and maintaining disease control, eradicating symptoms, lowering the risk of consequences, and enhancing patients' quality of life are the primary goals of treating allergic rhinitis [16].

Pharmacological treatment

The management of allergic rhinitis necessitates an integrated strategy, with consideration given to the course, severity, and individual social and psychological features of the patient, as well as any concurrent pathology.

Numerous pharmacological therapies exist, including as:

- Oral decongestants
- Intranasal corticosteroids
- Antihistamines

Leukotrienes significantly block the nasal passages. Patients with seasonal allergic rhinitis experience less symptoms and a higher quality of life after using leukotriene receptor antagonists. Comparable to antileukotrienes, nasal corticosteroids seem to be more effective.

Leukotriene and histamine antagonist combination therapy improves both quality of life and symptomatology [16]. The type and extent of each patient's symptoms should determine the course of medication for allergic rhinitis, which should relieve doctor preferences as well as nasal inflammation, sneezing, and rhinorrhea

both during the day and at night. Antihistamines, which prevent the release of histamines from the nasal mucosa, can be used to treat allergy-induced symptoms such as pruritus, sneezing, etc. as these symptoms are caused by the release of histamine from mast cells [17].

The cornerstones of AR therapy are decongestants, intranasal corticosteroids, leukotriene receptor antagonists, and oral/intranasal H1-antihistaminics.

Due to similar effectiveness and decreased frequency of side effects as compared to their first-generation equivalents, second-generation antihistamines have grown in popularity.

Effective second-generation Histamine (H1) receptor antagonist levocetirizine combats persistent AR, enhancing quality of life while lowering comorbidities and societal expenses.

Fexofenadine is a second-generation H1 receptor antagonist that is selective, non-sedating, and also affects inflammatory mediators.

Montelukast is a leukotriene D4 type I receptor antagonist that is extremely selective. The bronchodilator and anti-inflammatory qualities of leukotriene modifiers are combined.

The literature search confirms that there is an extra advantage to taking an antihistamine with montelukast. Effective symptom reduction is achieved by the combined therapy of montelukast and antihistamine, which has complementing and enhancing effects. When levocetirizine and montelukast are used together, the effects on symptoms and quality of life in AR patients are better than when levocetirizine is taken alone. When controlling AR symptoms, fexofenadine plus montelukast works better than antihistaminic drugs alone. Comparing concurrent levocetirizine and montelukast with monotherapy or placebo, as well as concurrent fexofenadine and montelukast with monotherapy or placebo, has been done in the literature. On the other hand, there is a dearth of information comparing concurrent montelukast-levocetirizine and montelukast-fexofenadine. Thus, our goal was to evaluate the cost-efficiency, safety, and effectiveness of these combinations in AR patients [18].

Impact of allergic rhinitis on QOL

An increasing amount of research indicates a connection between mental disorders and allergic rhinitis. Compared to the control group, there is a significantly greater chance of depression and suicidal thoughts in the AR group. Sick behaviors, including lethargy, anhedonia, appetite loss, social disengagement, and loss of interest in social activities, are caused by an inflammatory process [19].

According to parents' or guardians' perceptions, AR has a detrimental worldwide impact on children, teens, and adults' HRQL, primarily modifying physical function and negatively affecting the family group [20].

Impact on sleep

Insufficient amounts of sleep can negatively impact one's quality of life by causing weariness, irritability, memory loss, and excessive daytime sleepiness. Quality of life is frequently compromised in patients with AR not only by the disease's common symptoms, including as pruritus, nasal obstruction, sneezing, and rhinorrhea, but also by the activity of the mediators involved in its pathogenesis, which can interfere with sleep.

The nasal symptoms that affect sleep most severely are rhinorrhea and obstruction of the nose.

Impact on learning and social life

Due to daytime exhaustion brought on by both direct interference from symptoms and poor sleep quality, Allergic Rhinitis (AR) can negatively impact memory and learning. Concentration, memory, and executive functioning issues follow from this. For these cognitive effects to be avoided and intellectual performance to be enhanced, effective symptom management and proper sleep hygiene are essential.

People suffering from AR can make it difficult for them to participate in family activities like camping, picnics, and pet play, frequently experience feelings of isolation at home. Their entire family life is impacted by this isolation, which can even cause them to feel excluded by their families. AR affects how patients interact with others outside of their families in settings such as workplaces, colleges, and schools. Patients with AR frequently find it difficult to completely integrate with peers because of emotional difficulties and activity restrictions from avoiding allergens, which can cause emotional disruptions.

Impact of treatment

Patients' quality of life is improved by therapies that reduce symptoms associated with AR, particularly nasal blockage. Although it is preferred to avoid allergies, this is frequently not feasible or adequate. As a result, medication, especially intranasal corticosteroids and antihistamines, is usually the first line of treatment. When it comes to managing nasal blockage caused by AR, intranasal corticosteroids are very efficient. They also considerably enhance sleep quality by lowering nasal congestion. Subjective reports and objective assessments of sleep quality have demonstrated that these medicines reduce sleep problems and accompanying daytime sleepiness, as demonstrated by clinical studies [4].

Conclusion

All age groups are affected by the chronic illness known as Allergic Rhinitis (AR). The main cause of the condition's severe quality of life impairment is nasal blockage, which interferes with sleep. Inadequate sleep has negative consequences on adults' mood and productivity, patients' emotional problems, and daily weariness, cognitive decline, and decreased professional performance. Healthcare professionals frequently ignore AR-related sleep disturbances despite their seriousness. In order to minimize inflammation and improve the quality of life for patients, effective treatment includes controlling the environment and using the right medications [4].

A detailed medical history and physical exam are used to make the diagnosis. It is typically necessary to perform additional diagnostic testing, such as skin-prick tests or allergen-specific IgE tests, to determine that underlying allergies are the source of the rhinitis. The available therapy options for allergic rhinitis are typically safe, well-tolerated, and effective in treating symptoms. The key elements of treatment for the condition are intranasal corticosteroids and second-generation oral antihistamines. In certain situations, allergen immunotherapy and additional drugs including decongestants and oral corticosteroids may be helpful [12].

References

1. Ashfaq H, Nazir S. Impact of allergic rhinitis on quality of life among young adults. *Res Militaris*. 2023;13(4):226-40.
2. Sur DK, Plesa ML. Treatment of allergic rhinitis. *Am Fm Physician*. 2015;92(11):985-92.

3. Tripathi A, Patterson R. Impact of allergic rhinitis treatment on quality of life. *Pharmacoeconomics*. 2001;19(9):891-99.
4. Camelo-Nunes IC, Solé D. Allergic rhinitis: Indicators of quality of life. *J Bras Pneumol*. 2010;36(1):124-33.
5. Yıldız E, Koca Yıldız S, Ulu Ş, Koca T. Comparison of therapeutic efficacy of antihistaminics and combinations of montelukast with allergic rhinitis. 2019.
6. Park DY, Lee YJ, Kim DK, Kim SW, Yang HJ, Jun YJ, et al. KAAACI allergic rhinitis guidelines: Part 2. Update in non-pharmacological management. *Allergy Asthma Immunol Res*. 2023;15(2):145-59.
7. Romano MR, James S, Farrington E, Perry R, Elliott L. The impact of perennial allergic rhinitis with/without allergic asthma on sleep, work and activity level. *Allergy Asthma Clin Immunol*. 2019;15:1-10.
8. Roger A, Arcalá Campillo E, Torres MC, Millan C, Jáuregui I, Mohedano E, et al. Reduced work/academic performance and quality of life in patients with allergic rhinitis and impact of allergen immunotherapy. *Allergy Asthma Clin Immunol*. 2016;12:40.
9. Bagherinia E, Bagherinia M, Khamoushi F, Davoodi A, Mortazavi SH. Association between nutritional status and quality of life in patients with allergic rhinitis. *Crescent J Med Biological Sci*. 2022;9(4):213-17.
10. Greiner AN, Hellings PW, Rotiroti G, Scadding GK. Allergic rhinitis. *Lancet*. 2011;378(9809):2112-22.
11. Panchal S, Patil S, Barkate H. Evaluation of efficacy and safety of montelukast and levocetirizine FDC tablet compared to montelukast and levocetirizine tablet in patients with seasonal allergic rhinitis: A randomized, double blind, multicenter, phase III trial. *Int J Otorhinolaryngol Head Neck Surg*. 2021;7(1):83-90.
12. Small P, Keith PK, Kim H. Allergic rhinitis. *Allergy Asthma Clin Immunol*. 2018;14(2):51.
13. Gupta V, Matreja PS. Efficacy of montelukast and levocetirizine as treatment for allergic rhinitis. *J Allergy Ther*. 2010;1(1):103.
14. Terada T, Kawata R. Diagnosis and treatment of local allergic rhinitis. *Pathogens*. 2022;11(1):80.
15. Siddiqui ZA, Walker A, Pirwani MM, Tahiri M, Syed I. Allergic rhinitis: Diagnosis and management. *Br J Hosp Med*. 2022;83(2):1-9.
16. Fayozza E, Shokhrom I, Azizovich KN. Use of new methods in the treatment of allergic rhinitis. *Innovative Dev Res Educ*. 2023;2(14):266-75.
17. Kiran M, Pawaskar ML, Sheikh MS, Waghambare MP. Efficacy and safety for the combination of paracetamol, phenylephrine and chlorpheniramine maleate in Indian pediatric patients of common cold and allergic rhinitis-post-marketing surveillance study. *Int J Med Sci Diagnosis Res*. 2021;5(7):1-7.
18. Mahatme MS, Dakhale GN, Tadke K, Hiware SK, Dudhgaonkar SD, Wankhede S. Comparison of efficacy, safety, and cost-effectiveness of montelukast-levocetirizine and montelukast-fexofenadine in patients of allergic rhinitis: A randomized, double-blind clinical trial. *Indian J Pharmacol*. 2016;48(6):649-53.
19. Jarosz M, Syed S, Błachut M, Badura Brzoza K. Emotional distress and quality of life in allergic diseases. *Wiad Lek*. 2020;73(2):370-73.
20. Rosario CS, Murrieta-Aguttes M, Rosario NA. Allergic rhinitis: Impact on quality of life of adolescents. *Eur Ann Allergy Clin Immunol*. 2021;53(6):247-51.