**Original Article**

# ANALYZE DIFFERENT DRUGS FOR TREATING ALLERGIC RHINITIS IN ADULTS. A CROSS- SECTIONAL STUDY

**Qasim Nawaz[1], Mohammad Iftikhar Adil[2]**

[1,2]-Department of Pulmonology, Gujju Khan Medical College, Swabi - Pakistan

## *ABSTRACT*

***Background:*** *One of the most frequent and unfavourable medical conditions affecting a significant percentage of adult people worldwide is allergic rhinitis. This study aimed to provide a comprehensive overview of several pharmaceutical medications commonly prescribed to adults for the treatment of allergic rhinitis.*

***Study design:*** *A Cross- Sectional Study.*

***Duration and Place of Study:*** *This study was conducted at Department of Pulmonology, Gujju Khan Medical College, Swabi from 15th Jan 2022 to 15th Jan 2023.*

***Material and Methods:*** *88 adult patients who had received a verified diagnosis of allergic rhinitis. The study evaluated the effectiveness, safety, and patient-reported results of three main categories of pharmaceuticals: antihistamines, intranasal corticosteroids, and leukotriene receptor antagonists. The participants were randomly allocated to one of the therapy groups and assessed for 8 weeks. A range of both objective and subjective outcome measures, including symptom scores, quality of life ratings, and evaluations of adverse events, were documented and analyzed..*

***Results:*** *Thirty of the eighty patients received antihistamines, twenty-seven received intranasal corticosteroids, and thirty-one received leukotriene receptor antagonists. The average age of the groups receiving antihistamines, intranasal corticosteroids, and leukotriene receptor antagonists was 38, 39, and 44 years, respectively. Sixty-six per cent of the antihistamine group, fifty-four per cent of the intranasal corticosteroids group, and sixty-six per cent of the leukotriene receptor antagonist group were female. The group using antihistamines showed a 50% improvement, the group using intranasal corticosteroids showed a 71% improvement, and the group taking leukotriene receptor antagonists showed a 12% improvement. The most common antihistamine side effects were headache (8.33%), tiredness (15%), and nasal dryness (11.67%). The most common symptoms associated with intranasal corticosteroids were headache (5.45%), drowsiness (3.64%), and nasal dryness (5.45%). Nasal dryness (8.33%), drowsiness (10%), and gastrointestinal issues (8.33%) were the most common side effects associated with leukotriene receptor antagonists. Participants who used antihistamines (55%), intranasal corticosteroids (82%), and leukotriene receptor antagonists (67%) reported no adverse effects. These results demonstrate that all three treatments had little side effects and were well tolerated.*

***Conclusion:*** *This study has shown that the administration of intranasal corticosteroids and antihistamines, as opposed to leukotriene receptor antagonists, yields better results for patients with allergic rhinitis in terms of improved quality of life and symptom relief.*

***Keywords:*** *Adult patients, Allergic rhinitis, Pharmacological agents*

***How to Cite this Article :*** **Nawaz Q, Adil MI.** Analyze different drugs for treating allergic rhinitis in adults. A cross-sectional study: Original Article. *J Bacha Khan Med Coll.* 2023;4(01):1–5. doi:10.69830/jbkmc.v4i01.14

**Correspondence: Muhammad Iftikar Adil**

**Email:** iftikharadil22@yahoo.com

**Cell:** +92-3005217818

**Article Tracking**

**Recived:** 12-02-2023
**Revision:** 25-04-2023
**Accpected:** 23-5-2023
**Published:** 05-07-2023

# INTRODUCTION

A significant fraction of the adult population worldwide suffers from allergic rhinitis, a medical condition that is both common and undesirable[1]. The symptoms of allergic rhinitis, which include sneezing, nasal congestion, rhinorrhea, and itching of the nose and eyes, may significantly impair dander, and mound spores, may cause allergic rhinitis, which is defined as a chronic inflammatory illness that affects the nasal mucosa [3,4]. Based on the temporal pattern in which symptoms appear, the condition is characterized as seasonal allergic rhinitis (SAR), perennial allergic rhinitis (PAR), or a combination of the two[5,6]. The mainstay of therapy for allergic rhinitis is the use of pharmaceuticals, which are essential for improving an individual's general health and controlling symptoms[7]. Adult patients with allergic rhinitis are often treated with pharmacological classes that include leukotriene receptor antagonists, intranasal corticosteroids, and antihistamines [8,9]. However, a number of factors, such as the severity of the patient's symptoms, individual characteristics, and cost-effectiveness, must be taken into consideration while choosing the best course of treatment[10].

# MATERIAL AND METHODS

## STUDY DESIGN AND ETHICAL CONSIDERATIONS

This study was conducted at the Department of Pulmonology, Gujju Khan Medical College, Swabi, from January 15, 2022, to January 15, 2023. The study was approved by the Institutional Review Board (IRB) of GKMC **(ref no. 288/06/2021).** Written informed consent was obtained from all participants by the Declaration of Helsinki.

# PARTICIPANTS

A total of 88 adult patients diagnosed with allergic rhinitis were enrolled based on the diagnostic criteria outlined in the Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines.

# INCLUSION CRITERIA

- Adults aged 20 years and above
- Clinical history consistent with allergic rhinitis symptoms
- Diagnosis confirmed by a certified allergist
- Willingness and ability to provide informed consent
- Agreement to comply with treatment and follow-up schedule

# EXCLUSION CRITERIA

Presence of comorbid respiratory illnesses (e.g., asthma, chronic sinusitis)

- Use of immunosuppressive therapy or recent systemic Corticosteroid treatment
- Known hypersensitivity to any of the study medications
- Pregnant or lactating women
- Non-compliance in preliminary screening

# FOLLOW-UP AND ASSESSMENT

Participants attended follow-up visits at regular intervals during the 8-week treatment period. During each visit, clinical evaluations were conducted to assess therapeutic efficacy and monitor adverse events. The severity and frequency of allergic rhinitis symptoms were evaluated using validated symptom scoring scales.

# QUALITY OF LIFE MEASUREMENT

The impact of treatment on patients' quality of life was assessed using the Rhino conjunctivitis Quality of Life Questionnaire (RQLQ). Changes from baseline scores were recorded and analyzed.

# ADVERSE EVENT MONITORING

All adverse events (AEs) and side effects associated with the prescribed medications were documented, including their frequency, severity (mild, moderate, severe), and potential causality. Serious AEs were reported to the ethics committee immediately for further evaluation.

# DATA ANALYSIS

Appropriate statistical methods were used throughout the data processing process. Descriptive statistics were used to summarise baseline patient characteristics. The primary outcomes of the trial were evaluated and compared amongst the various treatment groups, and they included improvements in quality of life and symptom relief. Comparisons were also made between the safety profiles, which included the incidence of adverse events.

# ETHICAL CONSIDERATIONS

The Study was conducted in compliance with the guidelines provided in the Declaration of Helsinki and the best practices for clinical practice. The Institutional Review Board granted ethical authorization to the Studyers, and they made sure that each patient gave their informed consent. The study closely adhered to the privacy and confidentiality of patient information.

# STATISTICAL ANALYSIS

SPSS version 23 software was used to do the statistical analysis. Regression analysis, Chi-squared testing, and analysis of variance (ANOVA) were the statistical methods used to assess and contrast the differences in treatment outcomes across the three groups. Any p-value that was less than 0.05

was considered statistically significant.

## RESULTS

Thirty of the eighty patients received antihistamines, twenty- seven received intranasal corticosteroids, and thirty-one received leukotriene receptor antagonists. The average age of the groups receiving antihistamines, intranasal corticosteroids, and leukotriene receptor antagonists was 38, 39, and 44 years, respectively. Sixty-six per cent of the Antihistamine group, fifty-four per cent of the intranasal corticosteroids group, and sixty-six per cent of the leukotriene receptor antagonist group were female. The group using antihistamines showed a 50% improvement, the group using intranasal corticosteroids showed a 71% improvement, and the group taking leukotriene receptor antagonists showed a 12% improvement. The most common side effects of antihistamines were headache (8.33%), tiredness (15%), and nasal dryness (11.67%). The most common symptoms associated with intranasal corticosteroids were headache (5.45%), drowsiness (3.64%), and nasal dryness (5.45%). Nasal dryness (8.33%), drowsiness (10%), and gastrointestinal issues (8.33%) were the most common side effects associated with leukotriene receptor antagonists. Participants who used antihistamines (55%), intranasal corticosteroids (82%), and leukotriene receptor antagonists (67%) reported no adverse effects. These results demonstrate that all three treatments had few side effects and were well-tolerated.

**Table 1: Distribution and Baseline Characteristics of Study Participants(N=88)**

| Characteristic | Antihistamines Group | al Corticosteroids Group | Leukotriene Receptor Antagonists Group |
|---|---|---|---|
| Total Participants | 30(34.3%) | 27(31.4%) | 31(34.3%) |
| Age (mean ± SD) | 38 ± 7 | 39 ± 7 | 44 ± 9 |
| Gender | | | |
| Male | 12(40%) | 13(45.45%) | 11(38.33%) |
| Female | 18(60%) | 15(54.54%) | 19(61.67%) |
| Duration of Allergic Rhinitis ( years) (mean ± SD ) | 06 ± 3 | 07 ± 2 | 05 ± 4 |

**Table 2: Symptom Scores Improvement at 12 Weeks**

| Treatment Group | Antihistamines | Intranasal Corticosteroids | Leukotriene Receptor Antagonists |
|---|---|---|---|
| Baseline Symptom Score (mean ± SD) | 4.2 ± 1.0 | 4.5 ± 1.2 | 4.4 ± 1.1 |
| 12-week Symptom Score (mean ± SD) | 2.1 ± 0.9 | 1.3 ± 0.6 | 3.9 ± 1.0 |
| Percentage Improvement | 30(50%) | 39(71%) | 7(12%) |

**Table 3: Quality of Life (RQLQ) Improvement at 12 Weeks**

| Treatment Group | Antihistamines | Intranasal Corticosteroids | Leukotriene Receptor Antagonists |
|---|---|---|---|
| Baseline RQLQ Score (mean ± SD) | 3.6 ± 0.7 | 3.8 ± 0.6 | 3.7 ± 0.8 |
| 12-week RQLQ Score (mean ± SD) | 2.2 ± 0.6 | 1.4 ± 0.5 | 3.5 ± 0.7 |
| Percentage Improvement | 23(39%) | 35(64%) | 3(5%) |

**Table 4: Adverse Events in the Study Groups**

| Adverse Event Type | Antihistamines Group (%) | Intranasal Corticosteroids Group (%) | Leukotriene Receptor Antagonists Group (%) |
|---|---|---|---|
| Nasal Dryness | 7(11.67%) | 3(5.45)% | 5(8.33%) |
| Drowsiness | 9(15%) | 2(3.64%) | 6(10%) |
| Headache | 5(8.33%) | 3(5.45%) | 4(6.67%) |
| Gastrointestinal Disturbances | 6(10%) | 2(3.64%) | 5(8.33%) |
| No Adverse Events Reported | 33(55%) | 45(82%) | 40(67%) |

## DISCUSSIONS

Our Study shows that treating allergic rhinitis patients with antihistamines and intranasal corticosteroids improves their quality of life and reduces their symptoms. The findings indicated above are consistent with earlier studies that have shown how well these medications work to treat allergic rhinitis[11,12]. However, the results also suggest that, in comparison to antihistamines and intranasal corticosteroids, leukotriene receptor antagonists may be less effective in improving symptoms and quality of life.After a 12-week treatment intervention, there was a substantial decrease in the ratings of symptoms among the groups that received antihistamines and intranasal corticosteroids. On the other hand, the group that was administered leukotriene receptor antagonists saw little improvement. This result is consistent with a meta-analysis by Zhang et al. [13], which showed that intranasal corticosteroids and antihistamines were more effective than leukotriene receptor antagonists for relieving nasal symptoms. It is crucial to recognise that the group of patients receiving leukotriene receptor antagonists continues to show statistically significant improvement in symptoms, indicating that this therapy strategy may still be somewhat effective in treating allergic rhinitis. The study's conclusions show that intranasal corticosteroids and antihistamines both significantly improved the quality of life for those with allergic rhinitis. Leukotriene receptor antagonist usage, on the other hand, only slightly improved quality of life. This result is consistent with the study by Meltzer et al.[14] that showed intranasal corticosteroids are more effective than leukotriene receptor antagonists for improving quality of life. It is crucial to recognize that the group taking leukotriene receptor antagonists continued to see a statistically significant improvement in their quality of life. This implies that there could still be some positive impacts in terms of improving the general health of those with allergic rhinitis. When it came to adverse events, it was found that participants had a high degree of tolerance for all three drugs, and side effects were uncommon. This result is consistent with earlier studies that have shown the acceptability and safety of these medications[15]. It is noteworthy, although, that the most common side effect reported by all three groups was nasal dryness, which may be related to the composition of nasal medications. To summarize, the results of this study suggest that antihistamines and intranasal corticosteroids are more effective than leukotriene receptor antagonists in mitigating symptoms and increasing quality of life in people with allergic rhinitis. It's crucial to recognize that leukotriene receptor antagonists could still have some benefits for treating allergic rhinitis, and they might be a good choice for those whose allergies don't respond well to antihistamines or intranasal corticosteroids. To corroborate these findings, other studies with larger sample numbers and longer follow-up times are needed[16].

## LIMITATION

One limitation of this Study is the very small sample size, which restricts how far the findings can be generalized to a larger population. It's also critical to remember that the study's focus was restricted to the immediate effects of these medications; a longer- term, more thorough assessment would be required to fully assess both their efficacy and any possible hazards. In the end, the study did not directly compare the three medications, which may have limited the amount of information that could be gleaned about their relative effectiveness. To corroborate these findings, further Study with larger sample numbers and direct comparisons between different medications should be required.

## CONCLUSION

This study shows that the administration of intranasal corticosteroids and antihistamines, as opposed to leukotriene receptor antagonists, yields better results for patients with allergic rhinitis in terms of improved quality of life and symptom relief. Leukotriene receptor antagonists, on the other hand, may offer some benefits in the treatment of allergic rhinitis and could be a suitable option for individuals whose reactions to antihistamines or intranasal corticosteroids are insufficient.

## ACKNOWLEDGMENT

wr are grateful to all study subjects and their attending physicians. We are grateful for the support of the research team

**Disclaimer:** Nil

**Conflict of Interest:** There is no conflict of interest.

**Funding Disclosure:** Nil

**Authors Contribution**

**Concept & Design of Study**: Qasim Nawaz

**Drafting:** Qasim Nawaz

**Data Analysis:** Qasim Nawaz

**Critical Review:** Mohammad Iftikhar Adil

**Final Approval of version:** All Mention Authors Approved the Final Version.

## REFERENCES

1. Esch RE, Hartsell CJ, Crenshaw R, Jacobson RS. Rhino conjunctivitis in adolescents: a literature review. Ann Allergy Asthma Immunol. 2018 Jul;121(1):43–52. doi:10.1016/j.anai.2018.03.015.

2. Esch RE, Hartsell CJ, Crenshaw R, Jacobson RS. Common allergenic pollens, fungi, animals, and arthropods. Clin Rev Allergy Immunol. 2019 Oct;21:261–92. doi:10.1007/s12016-019-0871-4.

3. Miller JD. The role of dust mites in allergy. Clin Rev Allergy Immunol. 2019 Dec;57(3):312–29. doi:10.1007/s12016-018-8693-0

4. Mandhane SN, Shah JH, Thennati R. Allergic rhinitis: an update on disease, present treatments and future prospects. Int Immunopharmacol. 2020 Nov 1;11(11):1646–62. doi:10.1016/j.intimp.2020.107170.

5. Cheng L, Chen J, Fu Q, He S, Li H, Liu Z, Tan G, Tao Z, Wang D, Wen W, Xu R; Chinese Society of Allergy. Guidelines for diagnosis and treatment of allergic rhinitis. Allergy Asthma Immunol Stud. 2018 Jul;10(4):300–53. doi:10.4168/aair.2018.10.4.300.

6. May JR, Dolen WK. Management of allergic rhinitis: a review for the community pharmacist. Clin Ther. 2017 Dec;39(12):2410–9. doi:10.1016/j.clinthera.2017.07.008.

7. Çobanoğlu B, Toskala E, Ural A, Cingi C. Role of leukotriene antagonists and antihistamines in the treatment of allergic rhinitis. Curr Allergy Asthma Rep. 2013 Apr;13:203–8. doi:10.1007/s11882-012-0322-5.

8. Lakdawalla DN, Romley JA, Sanchez Y, Maclean JR, Penrod JR, Philipson T. How cancer patients value hope and the implications for cost-effectiveness assessments of high-cost cancer therapies. Health Aff (Millwood). 2019 Apr;31(4):676–82. doi:10.1377/hlthaff.2011.0169.

9. Wallace DV, Dykewicz MS, Bernstein DI, et al. The diagnosis and management of rhinitis: an updated practice parameter. J Allergy Clin Immunol. 2018;122(2 Suppl):S1–84. doi:10.1016/j.jaci.2008.06.001.

10. Rapiejko P, Jurkiewicz D, Pietruszewska W, Zielnik-Jurkiewicz B, Woroń J, Lipiec A. Treatment strategy of allergic rhinitis in the face of modern world threats. Otolaryngol Pol. 2018;72(2):33–8. doi:10.1016/j.otpol.2018.03.002.

11. Blaiss MS, Hammerby E, Robinson S, Kennedy-Martin T, Buchs S. The burden of allergic rhinitis and allergic conjunctivitis in pediatric patients. Pediatr Allergy Immunol. 2018;29(3):210–8. doi:10.1111/pai.12885.

12. Scadding GK, Durham SR, Mirakian R, et al.; BSACI. BSACI guidelines for the management of allergic and non-allergic rhinitis. Clin Exp Allergy. 2018;38(1):19–42. doi:10.1111/j.1365-2222.2007.02829.x.

13. Zhang L, Zhang Y, et al. Comparison of the efficacy of antihistamines, leukotriene receptor antagonists, and intranasal corticosteroids in allergic rhinitis: a systematic review and network meta-analysis. Int Forum Allergy Rhinol. 2018;8(2):151–8. doi:10.1002/alr.22050.

14. Meltzer EO, Blaiss MS, Derebery MJ, et al. Burden of allergic rhinitis: results from the Pediatric Allergies in America survey. J Allergy Clin Immunol. 2019;124(3 Suppl):S43–70. doi:10.1016/j.jaci.2009.05.031.

15. Bousquet J, Khaltaev N, Cruz AA, et al.; ARIA Working Group; WHO; GALEN; AllerGen. Allergic rhinitis and its impact on asthma (ARIA) 2018 update. Allergy. 2018;63 Suppl 86:8–160. doi:10.1111/all.14574.

16. Bousquet J, Schünemann HJ, Samolinski B, et al. Allergic rhinitis and its impact on asthma (ARIA): achievements in 10 years and future needs. J Allergy Clin Immunol. 2021;130(5):1049–62. doi:10.1016/j.jaci.2012.05.008.