



## Pharmacotherapeutical Study and Intricacy of Allergic Rhinitis

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### Abstract

Allergic rhinitis is an immunologically mediated disease initiated by an antigen and antibody reaction in hyperactive individuals. Allergic rhinitis (AR) is estimated to affect between 10 and 40% of the population [1,2]. Characterized by sneezing, rhinorrhea, nasal obstruction. In this study we observed how this persistent symptoms leads to development of major complications like nasal polyps and asthma. Study also suggest the progression of complications in different age groups of allergic rhinitis patients. Various treatment is available for AR and also there has been little improvement in patients quality of life. The selection for treatment for AR patients aims to control the symptoms.

**Keywords:** Hyperactive; Persistent; Sneezing; Nasal Polyps; Asthma; Quality of Life

### Introduction

Allergic rhinitis is an Ig E mediated immunologic response of nasal mucosa to air-borne allergens and is exceptionally characterized by nasal discharge, sneezing, nasal obstruction, nostril cavity itching, anterior and posterior rhinorrhea and mild headache [1,2]. They may be also associated with symptoms of itching in the eyes, palate and pharynx.

In addition to nasal and ocular symptoms directly related to the allergic process, interference of these symptoms with sleep leads to daytime sleepiness and altered quality of life [3].

Estimate of its prevalence very widely but good epidemiologic studies suggest that 20 to 30% of adults and up to 40% of children are affected [4]. It is believed that environmental allergens are responsible for maintenance of underlying hyperresponsiveness in the vast majority of AR patient.

### Objectives

- To know the association between allergic rhinitis and allergic nasal polyps

- To know the association between allergic rhinitis and asthma
- Pharmacotherapeutical study of AR with planned and combined therapy.

### Review of Literature

The review was conducted according to a protocol that outlined the research approach.

### Material and Method

A retrospective study was done on 140 patients presenting to partani ENT hospital Udaipur Rajasthan. Patients present with clinical manifestation like running nose (rhinorrhea), sneezing (10 to 15 sneezes), nasal obstruction in morning and mainly in night hours, mild headache, itching (involved eye, palate and pharynx).

Some patients represent with difficulty in breathing, wheezing sound, ear pain (due to accumulation of fluid behind tympanic membrane) [5].

Physicians fails to regularly questions patients about the disorders during routine visits [11]. So there occurred development of complications like asthma and nasal polyps.

Appropriate examination to assess the nasal cavity with the help of nasal speculum found mild to moderate inflammation of turbinates in nostril, excessive allergic mucosa with some extent of hypertrophied (Growth of ethmoidal polyp). Also found that genetically deviated nasal septum (DNS) culminate in early development of allergic rhinitis.

### Development of allergic nasal polyp with allergic rhinitis (ANPAR)

This contemplative study of 140 patients with most common age group. The most common polyp is associated are ethmoidal polyp.

Epidemiological studies provides little evidence to support this relationship with NP found in only 1 to 2% of patient with skin prick test. There is some evidence of genetic elements to Nasal polyps. A link has been demonstrated recently between HLA-A74 AND NP. Anterior and posterior rhinoscopy results single or multiple pale, grey polypoidal masses.

Age (year)	Patients with ARANP
2-13	3
14-25	5
26-35	3
36-60	7
Above 61	23

**Table a**

### Allergic rhinitis and its impact on asthma (ARIA)

ARIA was initiated during a WHO workshop 1999 and was published in 2001. ARIA reclassified AR is mild/moderate, severe and intermittent/persistent [10]. In its 2010 revision ARIA developed clinical practice guidelines for the management of allergic rhinitis and asthma comorbidities based on GRADE (grading of recommendation assessment, development and evaluation).

A retrospective study of 140 patients represent with symptoms of allergic rhinitis from long period of time with nasal obstruction, sneezing, rhinorrhea, difficulty in breathing, wheezing sound.

Age (year)	Patients with ARIA
2-13	0
14-25	5
26-35	9
36-60	15
Above 61	17

**Table b**

### Pharmacotherapeutic study of ARIA and ARANP

#### Pharmacotherapy of ARANP

A decent approach for treatment of ARANP was to start with antibiotics containing (doxycycline+ lactobacillus spores) for adults with 100mg and for children's cefpodoxime proxetil 100 MG found to be effective.

Along with combination of leukotriene antagonist and H1 receptors antihistaminic that is montelukast+ levocetirizine, montelukast + ebastine.

Corticosteroids prescribed with aim of reducing inflammation in respiratory tract with appropriate dose according to age i.e. prednisolone 4mg (methylprednisolone) and adult dose 8 mg to the non diabetic patient for initially 15 days.

As intranasal antihistamines typically have a fast onset of action, demonstrated to significantly reduce symptoms within 15 to 30 min [12,13] with effects lasting up to 12 hrs [14,15].

Drugs to be continued after follow-up period of 10 days to continue with levocetirizine + montelukast and inhalational glucocorticoids (fluticasone propionate 0.05%w/w) or with combination of H1 receptors blocker azelastin+ fluticasone propionate) [7-9,16].

Diabetic patient suffering from AR steroid prescribed are deflazacort 6 mg dexamethasone 6 mg which is less potent than intermediate acting glucocorticoid.

Combination therapy found to be effective in 20% of patients who was suffering from ARANP.

For complete eradication of nasal polyps, patients were advised with FES surgery (Functional Endoscopic Sinus surgery).

### Pharmacotherapy of ARIA

Patients presented to OPD, were presented with difficulty in breathing, breathlessness, wheezing sound were prescribed with treatment of combination therapy of directly acting bronchodilators (methylxanthine) etophylline 77 mg+ theophylline 23 mg, total 100mg of initial dose for 10 days.

Other treatment include leukotriene antagonist along with non sedative antihistamines for prevention of allergic mediated asthma attacks.

Steroids prevent inflammation in airway tract includes prednisolone methylprednisolone for non-diabetic patients and for diabetic patient dexamethasone, deflazacort and betamethasone were prescribed. Inhalational glucocorticoid found to be effective in pregnancy.

Immunotherapy may also reduce the risk for the future development of asthma in children with allergic rhinitis [6].

### Discussion

ARANP and ARIA has always been challenging co-morbiditis in allergic rhinitis. Treatment with Combination therapy and follow up monitoring found to be effective.

ARANP were treated with surgically removal of ethmoidal associated nasal polyp.

### Conclusion

The observational study is to bring in notice to allergist, academicians, researchers about epidemiological studies of AR with their intricacy. The pharmacotherapy along with surgery provides relief.

### Conflict of Interest

There is no conflict of interest.

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### Bibliography

1. Bjorksten B., et al. "Worldwide time trends for symptoms of rhinitis and conjunctivitis: phase III of the international study of asthma and allergies in childhood". *Pediatric Allergy and Immunology* 19 (2008): 110-124.
2. Bernstein J A. "Azelastrine hydrochloride: a review of pharmacology, pharmacokinetics, clinical efficacy and tolerability". *Current Medical Research and Opinion* 23 (2007): 2441-2452.
3. Dykewicz MS and Hamilos DL. "Rhinitis and sinusitis". *The Journal of Allergy and Clinical Immunology* 125 (2010): S103-115.
4. Meltzer EO. "Allergic Rhinitis: Burden of Illness, Quality of Life, Comorbidities, and Control". *Immunology and Allergy Clinics of North America* 36 (2016): 235-248.
5. Small P., et al. "Rhinitis: a practical and comprehensive approach to assessment and therapy". *Journal of Otolaryngology* 36 (2007): S5-27.
6. Frew AJ. "Allergen immunotherapy". *The Journal of Allergy and Clinical Immunology* 125 (2010): S306-313.
7. Pullerits T., et al. "Randomized placebo-controlled study comparing a leukotriene receptor antagonist and a nasal glucocorticoid in seasonal allergic rhinitis". *American Journal of Respiratory and Critical Care Medicine* 159.6 (1999): 1814-1818.
8. Ratner PH., et al. "Fluticasone propionate aqueous nasal spray provided significantly greater improvement in daytime and nighttime nasal symptoms of seasonal allergic rhinitis compared with montelukast". *Annals of Allergy, Asthma and Immunology* 90.5 (2005): 536-542.
9. Wilson AM., et al. "A comparison of topical budesonide and oral montelukast in seasonal allergic rhinitis and asthma". *Clinical and Experimental Allergy* 31.4 (2001): 616-624.
10. Bousquet J., et al. "Allergic rhinitis and its impact on asthma (ARIA) 2008 update (in collaboration with the World Health Organization, GA (2)LEN and AllerGen)". *Allergy* 63.86 (2008): 8-160.
11. Kim H and Kaplan A. "Treatment and management of allergic rhinitis [feature]". *Clinical Focus* (2008): 1-4.
12. Horak F., et al. "Azelastrine nasal spray and desloratadine tablets in pollen-induced seasonal allergic rhinitis: a pharmacodynamic study of onset of action and efficacy". *Current Medical Research and Opinion* 22 (2006): 151-157.
13. Patel D., et al. "Onset and duration of action of nasal sprays in seasonal allergic rhinitis patients: olopatadine hydrochloride versus mometasone furoate monohydrate". *Allergy and Asthma Proceedings* 28 (2007a): 592-599.

14. Greiff L., *et al.* "Topical azelastine has a 12- hour duration of action as assessed by histamine challenge-induced exudation of alpha 2- macroglobulin into human nasal airways". *Clinical and Experimental Allergy* 27 (1997): 438-444.
15. Patel P, *et al.* "An assessment of the onset and duration of action of olopatadine nasal spray". *Otolaryngology-Head and Neck Surgery* 137 (2007c): 918-924.
16. Derendorf H and Meltzer EO. "Molecular and clinical pharmacology of intranasal corticosteroids: clinical and therapeutic implications". *Allergy* 63 (2008): 1292-1300.