REVIEW ARTICLE

Management of Allergic Rhinitis: An Update

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Burden of allergic rhinitis: Indian perspective

Allergic rhinitis (AR) is an inflammatory condition which is symptomatically presented by sneezing, nasal congestion, nasal itching and rhinorrhoea (nasal discharge).[1]

As per the Indian statistics, the affect of AR is said to be rising since the last 2 decades. There is co-existence of allergic rhinitis and asthma in Indian population. Health related quality of life is adversely impacted by allergic rhinitis.[2]

Allergens such as pollen, mold, mite and animal allergens have been associated with development of AR (Figure 1).[2]

Etiology and risk factors

Allergic rhinitis is an immunoglobulin (Ig)E mediated response to inhaled allergens, resulting in inflammation of the nasal mucosa driven by type 2 helper cells (Th2).[1] When IgE antibody, specifically bounds to Fcε receptors on mast cells and basophils once recognizes allergens (antigens); histamine, leukotrienes, platelet activating factor are released from these cells, and allergic reactions are triggered.[3]

The risk factors associated with AR are antibiotic use, self-reported air pollution, contact with livestock, contact with cats and dogs and vigorous physical activity.[1]

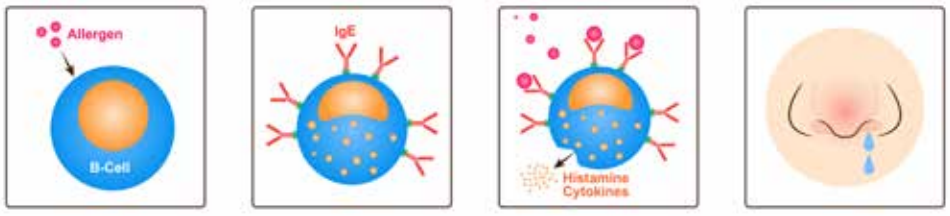
Figure 1: Important causative agents of allergic rhinitis[1,2]

Allergic rhinitis: Optimal therapeutic management

Role of antihistamines

Antihistamines that target histamine H1 receptors play an important role in improvement of quality of life of patients with AR. Antihistamines are often indicated for mild to severe disease. Additionally, observational studies in Asia illustrated that patients with allergic rhinitis were most

Mechanism of allergic rhinitis[3]



Exposure to allergen | IgE production, attach to mast cell | Allergen attachment, mast cell release histamines | Allergic rhinitis

commonly (≥50%) treated with antihistamines.[3] As per the new revised guidelines, second generation antihistamines are recommended for treatment of AR. In contrast to first generation H1 antihistamines, second-generation H1 antihistamines like bilastine are considered as first line of treatment for AR as they possess minimal or no sedative effects and no anti-cholinergic effects.[4]

Bilastine: A potent antihistamine drug for allergic rhinitis

European union approved bilastine as a selective second-generation H1 anti-histamine which can be incorporated for the management of allergic rhinoconjunctivitis (seasonal and perennial) and urticaria in patients aged 12 years or older.[4] Clinical studies show that bilastine is effective in improvement of nasal and eye symptoms in patients with AR.[4] According to the European Academy of Allergology and Clinical Immunology (EAACI) criteria for medications, bilastine covers all the criteria for the treatment of allergic rhinitis.[4]

Bilastine is a well-tolerated drug, even when given at high doses. It exhibits the power to provide with better health-related quality of life and does not exhibit anti-cholinergic or cardiological toxic effects. Additionally, it does not penetrate through the central nervous system and blood –brain barrier, and has few sedative effects.[4]

Pharmacokinetic properties of bilastine

Bilastine has a increased specificity for H1 receptors. Furthermore, it has minimal affinity for other receptors and exhibits anti-histamine and anti-allergic properties. It has a fast onset and long duration of action. It achieves maximum plasma concentration within 1-1.5 hours and is absorbed orally in a rapid pace.[4]

Leukotriene receptor antagonists

The leukotriene receptor antagonist such as montelukast is used for the prophylaxis and chronic treatment of asthma, the prevention of exercise-induced bronchospasm. Additionally, it also helps in relief of symptoms of allergic rhinitis. relief of symptoms of allergic rhinitis. It is well-tolerated, effective and safe drug.[5]

Clinical Evidences

The effectiveness and tolerability of bilastine 20 mg in patients with perennial allergic rhinitis (PAR)

A double- blind randomized trial[6] amongst a total of 765 patients was conducted to assess the effectiveness of bilastine over placebo in PAR Japanese patients. The outcome measures included was the mean change in total nasal symptom scores (TNSS) from baseline to week 2 (days 10-13). Out of 765 patients, 256 received bilastine, 254 received fexofenadine, and 255 were on placebo treatment.

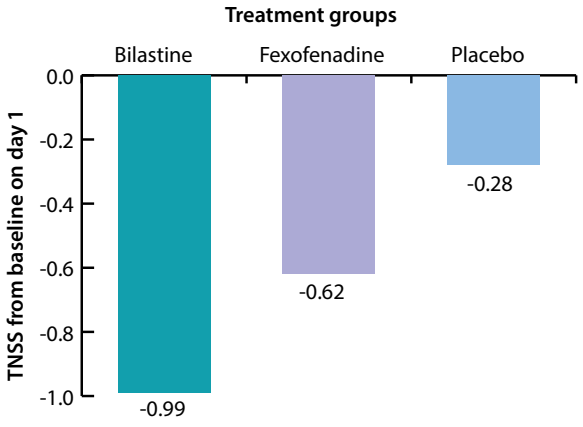
There was statistically significant reduction in TNSS from baseline on day 1 (Figure 2).

The findings of this study has found that bilastine is an effective and tolerable drug in PAR patients.

Efficacy and safety profile of bilastine in the treatment for allergic rhinoconjunctivitis

An Indian study[7] was conducted to evaluate the efficacy and safety of bilastine 20 mg and and it was compared with levocetrizine 5 mg in the treatment of allergic

Figure 2: TNSS* scores in different treatment groups receiving bilastine, fexofenadine and placebo as the treatment[6]



*total nasal symptom scores

rhinoconjunctivitis. In this study, 100 patients of chronic allergic rhinoconjunctivitis were selected, out of which 50 received bilastine 20 mg, and 50 patients received levocetirizine 5 mg. The evaluation of symptoms was done by measuring the total symptom score (TSS) before and after the 7th and 14th post-treatment day.

There was statistically significant reduction in the TSS in both the treatment groups on the 7th and 14+ post-treatment days. Bilastine showed fewer incidences of adverse effects in comparison to levocetrizine group (10% vs 38%). In the treatment of allergic rhinoconjunctivitis, bilastine can be used as the first line treatment as it exhibits good efficacy and good safety profile.

Effectiveness of bilastine and fexofenadine among allergic rhinitis (AR) patients in Indian population

An observational comparative Indian study[8] was conducted to differentiate between the efficacy of bilastine and fexofenadine in treatment of AR patients. In this study,

In the treatment of allergic rhinoconjunctivitis, bilastine can be used as the first-line of treatment as it exhibits good efficacy and good safety profile

104 patients were included and were then divided into two groups. One of the group recieved bilastine 20 mg OD (Group A) and the other group received fexofenadine hydrochloride 120 mg OD orally for two weeks (Group B).

The outcome measures included baseline total nasal symptom score (TNSS) which was significantly reduced in both the treatment groups (Table 1).

This study showed that in treatment of allergic rhinitis, bilastine is more effective than fexofenadine in reducing the TNSS score and it also enhances the quality of life of allergic rhinitis patients.

Safety and efficacy of long-term treatment with bilastine in patients with seasonal (SAR) or perennial allergic rhinitis (PAR)

An open label trial[9] was conducted amongst the 58 patients with SAR and 64 patients with PAR who received bilastine (20mg/day) for 12 weeks.

There was significant reduction in total nasal symptom score (TNSS), total ocular symptom score (TOSS), and total symptom score (TSS) relative to baseline when patients with SAR received bilastine. There was significant reduction in TNSS, TOSS, and TSS from the baseline in patients with PAR, when they received bilastine for prolonged time.

There were no reported adverse effects or deaths or patient withdrawal during this study. Bilastine was safe, well tolerated, and effective for patients with SAR and PAR.

Table 1: TNSS from Day 0 to after 1 day, 1 week and 2 weeks in both Groups A & B[8]

Treatment group	TNSS SCORES			
	Day 0	Day 1	Week 1	Week 2
Group A (Bilastine)	13.55	8.71	6.94	2.57
Group B (Fexofenadine hydrochloride)	13.45	9.78	7.65	3.43

Comparative efficacy of bilastine versus cetirizine and fexofenadine in relieving the symptoms of allergic rhinitis

A comparative study[10] was conducted to differentiate the effectiveness of bilastine versus cetirizine and fexofenadine in relieving the symptoms of AR.

This study included 75 patients and the outcome measures included were total nasal symptom scores, the global symptom scores, nasal secretions, and eye symptoms were assessed on both day 1 and day 2. It was concluded that bilastine is a safe and effective drug in relieving symptoms of AR.

Combined therapy with antihistamines and leukotriene receptor antagonists

Efficacy and Safety of a combination therapy of montelukast and antihistamines in patients with asthma and allergic rhinitis[11]

A randomized trial was conducted to assess the efficacy and safety of the fixed-dose combination of montelukast and antihistamines in patients with perennial allergic rhinitis with mild to moderate asthma and differentiate it with the efficacy and safety of montelukast alone. In this study 333 patients were selected, and 228 received the treatment. The outcomes were measured on basis of mean night-time nasal symptom score, mean composite symptom score, overall assessment of allergic rhinitis, forced expiratory volume in 1 second (FEV_1), forced vital capacity (FVC), FEV_1/FVC, asthma control test score.

This study found that fixed-dose montelukast or anti-histamine combinations are effective and well tolerated in patients with asthma and allergic rhinitis.

Effectiveness of montelukast alone or in combination with antihistamines in patients with persistent allergic rhinitis

A randomized study[12] which included 40 patients was conducted to evaluate the effectiveness of montelukast alone or in combination with antihistamines in patients with persistent allergic rhinitis. A total nasal symptom score was included as the outcome measure. The corollary of the study stated that montelukast alone or in combination with antihistamines progressively improved nasal symptoms within 6 weeks of treatment in patients with persistent allergic rhinitis.

Conclusion

Allergic rhinitis is an inflammatory disease which is an immunoglobulin (Ig)E mediated response to inhaled allergens, resulting in inflammation of the nasal mucosa driven by type 2 helper cells(Th2). The stated risk factors for AR are antibiotic use, self-reported air pollution, contact with livestock, contact with cats and dogs and vigorous physical activity. In contrast to first generation antihistamines, second generation antihistamines play a major role in improvement of quality of life in AR and thereby improving the symptoms. Bilastine is a second generation anti-histamine which is effective and has excellent tolerability profile in patients with AR and it does not cross the blood-brain barrier.

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