

## Original Article

# Comparison of Loratadine and Cetirizine in Perennial Allergic Rhinitis

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## Abstract

**Background:** Allergic rhinitis (AR) represents a global health problem, affecting 5-50% of the population worldwide and numerous classes of pharmacological agents are available for its treatment. Two more popular of these drugs are Loratadine and Cetirizine. There are few direct comparator studies between these two drugs with inconsistent results.

**Materials and Methods:** A randomized, double-blind study for comparison the therapeutic effects of Loratadine and Cetirizine was conducted in an otolaryngologic clinic of a general hospital. Eighty patients with perennial allergic rhinitis were divided into two equal groups. One group received Loratadine 10 mg daily for two weeks and the other group Cetirizine 10 mg daily also for two weeks. Alterations of the allergic rhinitis symptoms including rhinorrhea, sneezing, nasal itching and nasal obstruction were compared between the two groups.

**Results:** Severity of all four studied symptoms was reduced by both drugs. Although Cetirizine had a little more efficacy, their difference was not statistically significant ( $P>0.05$ ). These two medications were most effective in reducing the sneezing and least effective on the nasal obstruction.

**Conclusion:** Loratadine and Cetirizine can reduce symptoms of the perennial allergic rhinitis but their difference is not statistically significant.

**Keywords:** Allergic Rhinitis, antihistamines, Cetirizine, Loratadine

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## Introduction

Allergic rhinitis (AR) represents a global health problem, affecting 5-50% of the population worldwide<sup>1-6</sup>. However, the prevalence of AR may be underestimated because many patients self-medicate without consulting a physician and thus are not included in official surveys.

Allergic rhinitis is clinically defined as a symptomatic disorder of the nose induced by IgE-mediated inflammation after allergen exposure.

Symptoms include rhinorrhea, nasal obstruction, nasal itching, and sneezing<sup>7,8</sup>. Traditionally, AR has been subdivided into seasonal AR (SAR) or perennial AR (PAR); SAR is triggered by numerous outdoor allergens, such as pollens and molds, whereas PAR is induced most frequently by indoor allergens, such as dust mites, molds, and animal dander. In addition to allergen avoidance, suggested treatments for AR include H1 receptor antagonists (antihistamines), corticosteroids, immunotherapy, intranasal saline solutions and leukotriene receptor antagonists.

Numerous classes of pharmacological agents are available for treatment of AR. Although not fully an ideal treatment, second-generation antihistamines exhibit many desirable properties and provide an effective means of symptomatic treatment for allergic rhinitis. Two more popular of these drugs are Loratadine and Cetirizine. Several clinical studies have shown the clinical efficacy of cetirizine<sup>9,10</sup> and loratadine<sup>11,12</sup>, however, there have been few direct comparator studies between these antihistamines and statistically significant differences reported in the relief of individual symptoms are small and inconsistent<sup>13</sup>.

This study is conducted to compare clinical efficacy of Cetirizine and Loratadine in reducing symptoms of perennial allergic rhinitis.

## Methods

### Subjects

Eighty patients aged from 15 to 60 years old who were presented with allergic rhinitis to an otolaryngologic clinic of a general hospital and who met our inclusion and exclusion criteria selected. Allergic rhinitis diagnosis was based on patient's signs and symptoms. Patients had allergic rhinitis for at least two years, at least three of the four following symptoms: rhinorrhea, nasal obstruction, nasal itching, and sneezing and had to have pale nasal mucosa without purulent discharge. Exclusion criteria included the presence of acute or chronic sinusitis, nasal polyposis, significant nasal septal deviation, nasal septal perforation and recent nasal or sinus surgery. Also they should not receive any antihistamine, Cromolyn, decongestant or corticosteroid (topical or systemic) within the preceding 2 weeks. Pregnant or lactating ones and

patients with head and neck cancer, human immunodeficiency virus-related nasal disease, cystic fibrosis and renal, hepatic pulmonary or cardiovascular disease were also excluded.

### Study design

A prospective randomized, parallel-group, double-blind study design was used. All patients were required to comply with the study protocol which was explained to them with both oral and written instructions. Patients were randomized into 2 groups of 40 each to receive either Loratadine 10 mg or Cetirizine 10 mg daily for two weeks.

Four symptoms of allergic rhinitis; rhinorrhea, sneezing, nasal itching and nasal obstruction were assessed and scored before and after treatment in each group.

For rhinorrhea, nasal itching and nasal obstruction symptoms were scored as follows: 0. none, not noticeable, 1. mild, noticeable but not bothersome, 2. moderate, noticeable and bothersome some of the time, 3. severe, bothersome most of the time and/or very bothersome some of the time. Sneezing was scored as follows: 0. less than 5 times daily, 1. 6-10 times daily, 2. 11-15 times daily, 3. more than 15 times daily.

### Statistical analysis

P values smaller than 0.05 were considered as significant.

## Results

### Patient demographics

38 men and 42 women with mean age of 26 ( $\pm 5.3$ ) years completed our protocol. No serious adverse events occurred. The baseline characteristics for all of the four symptoms had no clinically meaningful differences among the two groups. Table 1 shows

**Table 1:** Rhinorrhea severity in the two groups before treatment.

Rhinorrhea severity	Loratadine group (n=40)		Cetirizine group (n=40)		X <sup>2</sup>	P value
	n	%	n	%		
0	1	2.5	0	0	1.56	.669
1	2	5	1	2.5		
2	15	37.5	14	35		
3	22	55	25	62.5		

**Table 2:** Rhinorrhea improvement in the two groups.

Rhinorrhea improvement	Loratadine group (n=40)		Cetirizine group (n=40)		X <sup>2</sup>	P value
	n	%	n	%		
None	10	25	5	12.5	2.77	0.428
1 Grade	12	30	13	32.5		
2 Grade	10	25	15	37.5		
3 Grade	8	20	7	17.5		

**Table 3:** Nasal itching improvement in the two groups.

Nasal itching improvement	Loratadine group (n=40)		Cetirizine group (n=40)		X <sup>2</sup>	P value
	n	%	n	%		
None	12	30	12	30	0.672	0.822
1 Grade	9	22.5	8	20		
2 Grade	11	27.5	12	30		
3 Grade	8	20	8	20		

**Table 4:** Sneezing improvement in the two groups.

Nasal itching improvement	Loratadine group (n=40)		Cetirizine group (n=40)		X <sup>2</sup>	P value
	n	%	n	%		
None	8	20	7	17.5	0.490	0.921
1 Grade	6	15	6	15		
2 Grade	22	55.5	21	52.5		
3 Grade	4	10	6	15		

**Table 5:** Nasal obstruction improvement in the two groups.

Nasal obstruction improvement	Loratadine group (n=40)		Cetirizine group (n=40)		X <sup>2</sup>	P value
	n	%	n	%		
None	10	25	11	27.5	0.113	0.952
1 Grade	16	40	12	30		
2 Grade	12	30	15	37.5		
3 Grade	2	5	2	5		

baseline characteristics of the two groups for the rhinorrhea symptom.

**Assessment of efficacy**

Changes from baseline of individual symptoms

were shown in tables 2 through 5. Severity of all four studied symptoms was reduced by both Loratadine and Cetirizine, but as it is shown in these tables although Cetirizine had a little more better results, no

statistically difference were seen between the two groups for all four symptoms. These two medications were most effective in reducing the sneezing (Table 4) and least effective on the nasal obstruction (Table 5).

## Discussion

Skassa-Brociek et al.<sup>12</sup> compared Loratadine, Mequitazine, and placebo in the symptomatic treatment of seasonal allergic rhinitis. Both Loratadine and Mequitazine induced a significant relief of nasal symptoms when these were compared to placebo.

In a multicentric randomized double-blind, placebo-controlled survey on 611 patients by Noonans et al.<sup>14</sup>, Cetirizine HCl 10 mg taken once daily in the morning offers symptomatic relief that improves the health-related quality of life of adults suffering from SAR.

Chiang and his colleagues<sup>15</sup> in a controlled trial of Cetirizine plus pseudoephedrine versus Loratadine plus pseudoephedrine for perennial allergic rhinitis showed that both combinations are efficacious for perennial allergic rhinitis and suggested that relief of sneezing and nasal congestion may be marginally better with the Cetirizine preparation.

In a study of 90 patients with allergic rhinitis by Nunes and Ladeira<sup>16</sup>, once-daily Cetirizine at 10mg or Loratadine at 10mg were both found to be significantly superior to placebo. In this study Cetirizine was shown to be quantitatively superior to Loratadine, although the differences were not statistically significant.

In our study we have also found that although Cetirizine had little better results, no statistically difference could be seen between the two groups for reducing any of all four classic symptoms of allergic rhinitis. So we suggest that for choosing one of these drugs other factors should be considered.

Greisner<sup>17</sup> in a literature review found that Cetirizine had a shorter onset of action than Loratadine for all comparisons. In a parallel-group, double-blind study comparing the somnolence and motivation profiles of Loratadine and Cetirizine, Salmun et al.<sup>18</sup> demonstrated that in patients aged 12 years or more, who had allergic rhinitis, Cetirizine use promoted somnolence and decreased motivation to perform

activities during the workday compared with Loratadine.

As we have also already suggested Slater et al.<sup>19</sup> after a valuable meta-analysis evaluating second-generation antihistamines, including Acrivastine, astemizole, Azelastine, Cetirizine, Ebastine, Fexofenadine, Ketotifen, Loratadine, Mizolastine and terfenadine found that for allergic rhinitis, all agents are effective and the choice should be based on other factors. It must be also emphasized that the preference of the patient may be a very important factor in making a choice between these drugs.

## Conclusion

Loratadine and Cetirizine both can reduce symptoms of the perennial allergic rhinitis but their difference is not statistically significant.

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