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ORIGINAL ARTICLE

Year : 2014 | Volume : 28 | Issue : 2 | Page : 86-92

A prospective study of comparison of efficacy and safety between levocetirizine and olopatadine in chronic idiopathic urticaria

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Date of Web Publication 15-Sep-2014



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DOI: 10.4103/0972-6691.140783



Abstract

Aims and Objective: The aim was to compare efficacy and safety of olopatadine with levocetirizine in patients of chronic idiopathic urticaria (CIU). **Materials and Methods:** This was a prospective, open, parallel, comparative randomized study. After assessing inclusion and exclusion criteria, patients were randomized and divided into two treatment groups: Group A ($n = 77$) received levocetirizine 5 mg once a day orally, and Group B ($n = 77$) received olopatadine 5 mg twice a day orally for 6 weeks. Patients were evaluated in terms of parameters under study that is, urticarial activity score (UAS), dermatological life quality index (DLQI), visual analog scale (VAS) (daytime sedation), and adverse drug reactions monitoring at every (2 weeks) visit. **Statistical Analysis:** We used the Student's t -test and the analysis of covariance for comparison of the results and the Chi-square test for comparison of incidence of adverse effects. **Results:** Both drugs reduced UAS significantly ($P < 0.05$) at all visits and olopatadine reduced UAS more than levocetirizine at 2 weeks ($P < 0.05$). Both drugs altered VAS at all visits significantly; however, inter-group differences were not significant. Each drug reduced DLQI score significantly. Levocetirizine reduced more DLQI than olopatadine, but the difference was not significant ($P > 0.05$). Olopatadine was associated with more side-effect profile, and most common side-effect was somnolence in both groups. **Conclusion:** Levocetirizine is a marginally superior drug as compared with olopatadine for long-term treatment of CIU in Indian population.

Keywords: Dermatological life quality index, levocetirizine, olopatadine, urticarial activity score, visual analog scale

How to cite this article:

Mahawar DK, Aseri ML, Mathur S, Gaur S, Sankhla S, Dass B. A prospective study of comparison of efficacy and safety between levocetirizine and olopatadine in chronic idiopathic urticaria. *Indian J Allergy Asthma Immunol* 2014;28:86-92

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Mahawar DK, Aseri ML, Mathur S, Gaur S, Sankhla S, Dass B. A prospective study of comparison of efficacy and safety between levocetirizine and olopatadine in chronic idiopathic urticaria. *Indian J Allergy Asthma Immunol* [serial online] 2014 [cited 2015 Feb 20];28:86-92. Available from: <http://www.ijaai.in/text.asp?2014/28/2/86/140783>

Introduction

Urticaria is a dermatological disorder characterized by transient circumscribed, raised (edematous), pink red usually pale pruritic evanescent, itchy skin lesions (wheals) elsewhere in the body. If wheals are present for more than 6 weeks with no identifiable cause it is termed as chronic idiopathic urticaria (CIU). [1] CIU is not a life-threatening condition; nevertheless, it has been shown to have a negative impact on the quality of life of the affected patient. [2]

The mast cells are the major effector cells in most forms of urticaria, especially in CIU. Histamine is the major mediator involved in the pathogenesis, whereas other mediators such as proteases, prostaglandin D₂, leukotriene-4 (LT-4), interleukin-4 (IL-4), IL-8 and tumor necrosis factor- α , etc., also play a significant role. [3]

Currently, no universal acceptable therapy is available for the treatment of CIU. In Pharmacotherapy, H₁ antihistamines are the mainstay of therapy for the symptomatic treatment of CIU. The second-generation antihistamines are preferred over the first-generation as they are less sedating, have less anticholinergic side-effects, and have longer half-life.

The immunomodulators such as cyclosporine, methotrexate, hydroxychloroquine, dapsone, and sulfasalazine are used in refractory and unremitting cases. [4]

Levocetirizine (second-generation antihistamine) is an Food and Drug Administration approved drug for the treatment of uncomplicated CIU. [5]

Olopatadine is one of the newer second-generation antihistamine that is used for treating allergic disorders such as allergic rhinitis, urticaria, and atopic dermatitis. [6] In Japan, olopatadine has been approved for the treatment of chronic urticaria; [7] however, in India, there are limited studies with this drug in CIU patients.

The ideal drug for chronic urticaria should not only have antihistaminic action, but should also have antiinflammatory action. [3]

Levocetirizine and olopatadine both have antiinflammatory property in addition to the H₁ receptor blockade, but they may have differences in their pharmacodynamic effects. [8],[9] Hence, they may have variable efficacy against CIU due to a different action of either drug on proinflammatory and inflammatory cascade in the pathology of CIU.

Therefore, we planned a study to compare the efficacy and safety of olopatadine with levocetirizine in CIU.

Materials and methods

Study design

This was a prospective, open, parallel, comparative randomized study conducted in patients attending the outpatient Department of Dermatology.

The protocol was prepared, and ethical clearance was obtained from the Institutional Ethical Committee. The sample size was determined by the method described by Watson, Jeff. [10]

Patients were randomized and divided into two treatment groups: Group A ($n = 77$) received levocetirizine five mg once a day orally, and Group B ($n = 77$) received olopatadine 5 mg twice a day orally for 6 weeks. Thus, 154 patients of CIU in both groups were enrolled after explaining them about the study method, study parameters, purpose of this study, side-effects and benefits of study drugs and written informed consent was obtained from each participant [Figure 1].

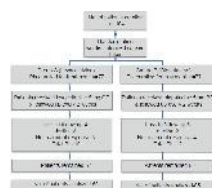


Figure 1: Study design

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Patients of 14-70 years of age in both genders were included. Patients having other types of urticaria, patients on corticosteroid or on immunotherapy, patients hypersensitive to antihistamines, patients on other drugs, patients having

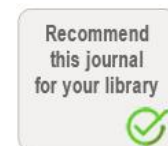
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renal or hepatic dysfunction, patients taking any CNS depressive drug and pregnant and lactating women were not included.

Patients were evaluated in terms of parameters under study at every visit. Every patient was also explained that how to observe the wheal number, itching (pruritus) intensity, daytime sedation level, and adverse reaction (s) and they were asked to note them in a diary.

Efficacy evaluation

Urticarial activity score

The urticarial activity score (UAS) consists of the sum of the wheal number score and the pruritus severity score. The wheal numbers were graded from 0 to 3 as follows: 0 - none, 1 - mild (<20 wheals/24 h), 2 - moderate (21-50 wheals/24 h), 3 - intense (>50 wheals/24 h or large confluent areas of wheals). The severity of pruritus was graded from 0 to 3 as follows: 0 - none, 1 - mild, 2 - moderate and 3 - intense. The total score ranges from 0 to 6. [11] The patients were evaluated at baseline visit and then at every 2 weeks for 6 weeks.

Dermatology life quality index score

It measures the quality of life. It was evaluated before treatment and at the end of the study (6 weeks). Ten questions were included in dermatological life quality index (DLQI) related to symptom and feeling, daily activity, leisure, school/work, personal relationship, and treatment. Each question has a maximum score of three and a minimum score of zero. [12] DLQI is a validated, reliable and clinically useful tool to evaluate the quality of life in chronic urticaria patients. [13]

Safety evaluation

Visual analog scale measuring daytime sedation

Day time sedation was assessed using 10 cm scale with the end point of "wide awake" and "nearly asleep" at 2, 4 and 6 weeks. Patients were asked to mark the point on line that best describe how much she/he felt the sedation in between these two end points. [14]

Adverse drug reactions

Spontaneously reported adverse drug reactions (ADRs), as well as ADRs from the checklist (somnolence, headache, dizziness, cough, fatigue, asthenia, dry mouth, and others), were monitored at 2, 4, and 6 weeks. These ADRs were graded according to common toxicity criteria (CTC version 2.0, Cancer Therapy Evaluation Program, National Cancer Institute).

Statistical analysis

Results were expressed as mean $\pm$ (SE) standard error of the mean. The Student's *t*-test (paired) used for comparison of results within the group, and the analysis of covariance (ANCOVA) used for comparison of results between the groups. The Chi-square test was used to analyze the incidence of ADRs in both groups. *P* < 0.05 (two-tailed) was considered as statistically significant.

Results

Demographic profile

One hundred fifty-four patients were randomized and divided into two groups. Ten patients in Group A and 12 patients in Group B, were excluded as they either did not follow-up or withdrawn their consent. Thus, total 67 patients in Group A and 65 patients in Group B completed the study procedure; however, we analyzed 65-65 patients from each group. [Table 1] and [Figure 2] show the demographic profile of CIU patients in both groups. It is evident from the table that both groups were identical in terms of their age and sex-wise distribution as the higher number of patients in Groups A and B were distributed in the age group of 31-50 years with the mean age of 36.82 and 37.18 years, respectively. Female preponderance was seen in both groups.

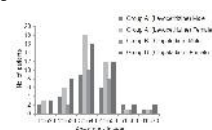


Figure 2: Age and sex distribution of patients of chronic idiopathic urticarial

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Age group	Group A (n=65)	Group B (n=65)
10-20	2	2
21-30	8	8
31-40	14	14
41-50	18	18
51-60	10	10
61-70	3	3
Total	65	65
Mean age	36.82	37.18

Table 1: Age and sex distribution of patients of chronic idiopathic urticaria

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Urticarial activity score

[Table 2] shows the changes in mean wheal and pruritus score and total score (UAS) in both groups at 2 weeks interval. [Figure 3] shows the reduction in mean UAS from baseline to 6 weeks by both drugs. [Table 3] shows that reduction in mean UAS at 2, 4, and 6 weeks from baseline, which was found to be statistically significant ($P < 0.05$, paired t -test) in each group. If we compare the UAS by ANCOVA at the end of 2 weeks in both groups (Group A vs. Group B), much more reduction of mean UAS was seen in Group B and this difference was found to be significant ($P < 0.05$). If we compare UAS by ANCOVA at the end of 4 and 6 weeks in both groups (Group A vs. Group B), the differences were found to be statistically not significant ($P > 0.05$).

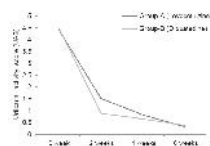


Figure 3: Mean urticarial activity score at 2 weeks interval

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Study	Week mean	Pruritus score	Urticaria (UAS)
Group A (Levocetirizine)	22.5 ± 0.7	2.1 ± 0.5	4.4 ± 0.3
Group B (Olopatadine)	22.5 ± 0.7	2.1 ± 0.5	4.4 ± 0.3
Group A (Levocetirizine)	19.5 ± 0.6	1.9 ± 0.4	3.8 ± 0.2
Group B (Olopatadine)	19.5 ± 0.6	1.9 ± 0.4	3.8 ± 0.2
Group A (Levocetirizine)	16.5 ± 0.5	1.6 ± 0.3	3.2 ± 0.1
Group B (Olopatadine)	16.5 ± 0.5	1.6 ± 0.3	3.2 ± 0.1
Group A (Levocetirizine)	13.5 ± 0.4	1.3 ± 0.2	2.6 ± 0.1
Group B (Olopatadine)	13.5 ± 0.4	1.3 ± 0.2	2.6 ± 0.1
Group A (Levocetirizine)	10.5 ± 0.3	1.0 ± 0.1	2.0 ± 0.0
Group B (Olopatadine)	10.5 ± 0.3	1.0 ± 0.1	2.0 ± 0.0

Table 2: Mean UAS at 2 weeks interval

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Study	Group A (Levocetirizine)	Group B (Olopatadine)	Group C (Placebo)
Week 2	22.5 ± 0.7	22.5 ± 0.7	22.5 ± 0.7
Week 4	19.5 ± 0.6	19.5 ± 0.6	19.5 ± 0.6
Week 6	16.5 ± 0.5	16.5 ± 0.5	16.5 ± 0.5
Week 8	13.5 ± 0.4	13.5 ± 0.4	13.5 ± 0.4
Week 10	10.5 ± 0.3	10.5 ± 0.3	10.5 ± 0.3
Week 12	7.5 ± 0.2	7.5 ± 0.2	7.5 ± 0.2
Week 14	4.5 ± 0.1	4.5 ± 0.1	4.5 ± 0.1
Week 16	1.5 ± 0.0	1.5 ± 0.0	1.5 ± 0.0
Week 18	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0
Week 20	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 3: Statistical analysis of mean UAS

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Visual analog scale measuring day-time sedation

[Figure 4] shows that daytime sedation occur with both drugs; however, visual analog scale (VAS) score decreases at subsequent visits. [Table 4] shows that each group drug produced sedation significantly ($P < 0.05$, paired t -test) at the end of 2, 4, and 6 weeks, but if we compare mean VAS by ANCOVA at the end of 2, 4, and 6 weeks (Group A vs. Group B), the differences were found to be statistically not significant ($P > 0.05$).

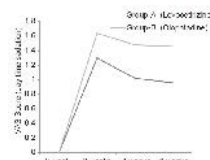


Figure 4: Mean visual analog scale (day time sedation)

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Study	Group A (Levocetirizine)	Group B (Olopatadine)	Group C (Placebo)
Week 2	10.5 ± 0.3	10.5 ± 0.3	10.5 ± 0.3
Week 4	7.5 ± 0.2	7.5 ± 0.2	7.5 ± 0.2
Week 6	4.5 ± 0.1	4.5 ± 0.1	4.5 ± 0.1
Week 8	1.5 ± 0.0	1.5 ± 0.0	1.5 ± 0.0
Week 10	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0
Week 12	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 14	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 16	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 18	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 20	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 4: Statistical analysis of mean VAS (day time sedation)

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Dermatological life quality index

[Table 5] and [Figure 5] show that each group drug decreased DLQI scores significantly ($P < 0.05$, paired t -test). Although levocetirizine improved quality of life more than olopatadine; however, the difference was found to be statistically not significant ($P > 0.05$) using ANCOVA.

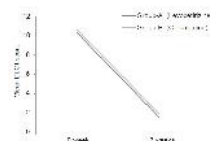


Figure 5: Mean dermatological life quality index score

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Study	Group A (Levocetirizine)	Group B (Olopatadine)	Group C (Placebo)
Week 2	10.5 ± 0.3	10.5 ± 0.3	10.5 ± 0.3
Week 4	7.5 ± 0.2	7.5 ± 0.2	7.5 ± 0.2
Week 6	4.5 ± 0.1	4.5 ± 0.1	4.5 ± 0.1
Week 8	1.5 ± 0.0	1.5 ± 0.0	1.5 ± 0.0
Week 10	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0
Week 12	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 14	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 16	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 18	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Week 20	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0

Table 5: Statistical analysis of mean DLQI score

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Adverse drug reactions

[Table 6] and [Figure 6] show the incidence of ADRs in both groups. Somnolence was the most common side-effect in both groups. In our study, all the ADRs reported were of mild (Grade 1) and moderate category (Grade 2). The incidence of adverse drug effects was significantly higher with olopatadine ($P < 0.05$).

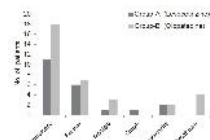


Figure 6: Incidence of various adverse drug reactions

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ADRs	Group-A (levocetirizine)			Group-B (olopatadine)		
	No.	Male	Female	No.	Male	Female
Constipation	2	2	0	1	1	0
Drowsiness	2	1	1	2	2	0
Headache	1	1	0	0	0	0
Urticaria	1	1	0	2	2	0
Headache	2	2	0	2	2	0
Tiredness	2	1	1	1	1	0
Mean (SD)	N=20 (10)			N=20 (10)		
Median						
SD						
95% confidence interval						

Table 6: Incidence of various ADRs

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Discussion

Treating the symptoms of CIU and ensuring a decent quality of life to the patients is challenging for the physicians; it mainly focuses on measures that provide symptomatic relief. The symptoms of CIU affect quality of life that is., difficulty in home management, looking after the home, personal care, recreation, social interaction, sex life and decrease in sleep, energy, etc. [2] Hence, the primary goal of treatment should be directed toward to ensure a decent quality of life. Changes in DLQI were monitored to assess the impact of the disease and its subsequent treatment on patient's quality of life. Itching that is a major symptom of chronic urticaria has an adverse effect on the quality of life and impact on performance of patients at work place, home, etc., Both the antihistamines, levocetirizine and olopatadine, reduced major symptoms such as itching and pruritus, wheal formation, disruption of leisure activity and sleep disturbance and resulted in a significant improvement in quality of life, that is, mean DLQI score decreased by 85.56% in levocetirizine group and 82.65% in olopatadine group. Improvement in DLQI score in our study is compatible to a study done by Potter *et al.* [15]

These antihistamines have various *in vivo* and *in vitro* antiinflammatory actions. Levocetirizine and cetirizine inhibits IL-8 and granulocyte-macrophage colony-stimulating factor production by IL-1 β stimulated A549 epithelial cells. [16] Levocetirizine significantly inhibits resting eosinophil adhesion to recombinant human vascular cell adhesion molecule-1. Levocetirizine inhibits eotaxin-induced eosinophil trans-endothelial migration through monolayers of human dermal cells *in vitro*. [17] Levocetirizine inhibits intercellular adhesion molecule-1 (ICAM-1) expression and secretion of IL-6 and IL-8 in primary human nasal epithelial cells infected with human rhinovirus. Nasal epithelial cells also exhibits significantly reduced rhinovirus load and reduced NF-B activation. [18] It also reduces the level of circulating adhesion molecule P-selectin and E-selectin and their expression by endothelial cells, this may result in antiinflammatory effects through inhibition of leukocytes adhesion. [19] In a recent study in patients with seasonal allergic rhinitis, levocetirizine treatment reduced eosinophils and activated pro-inflammatory T cells numbers named CD4 + CD29+, CD4 + CD212+, and CD4 + CD54+, while increased the number of CD4 + CD25 + T-cells. [20] Olopatadine inhibits anti human IgE-induced histamine release from human conjunctival tryptase/chymase containing mast cells. [21] Olopatadine inhibits the release of CC chemokine production in human nasal epithelial cells. [22] It also inhibits the release of peptide LTs from human eosinophils [23] and inhibits the histamine enhanced expression of ICAM-1 and E-selectin. [24] Olopatadine dose-dependently inhibits antigen-induced eosinophil infiltration through repression of IL-5 induced expression of CD11a/CD18 (leukocyte function-associated antigen-1) and CD11b/CD18 (Mac-1) on rat peritoneal eosinophils. [25]

These findings suggest that the levocetirizine and olopatadine have immunomodulatory as well as anti-inflammatory action and may improve the clinical prognosis of CIU patients.

Although second generation antihistamines offer good response in about 44-91% of all types of urticaria, but out of this, only chronic urticaria has 55% response rate. [26] Hence, antihistamines have a key role in pharmacotherapy of CIU.

Recently montelukast and zafirlukast (mast cell stabilizers) promised their effective role in chronic urticaria as an add on therapy to H₁ and H₂ blockers in about 50% of patients. [27] The most specific therapy for chronic uncontrolled disease in future may be anti-IgE monoclonal antibody - omalizumab. [28]

In our study, at the end of 2 weeks, UAS reduction was significantly more ($P < 0.05$) in olopatadine (80.18%) group as compared with levocetirizine group (65.61%). This difference may be due to faster resolution of symptoms by olopatadine. Both drugs reduced the score more than 50% at first visit, which means that both antihistamines are effective in reducing the sign and symptoms in CIU patients and at the end of the study mean UAS decreased by 92.76% in levocetirizine group and 91.54% in olopatadine group. Our study confirms the reduction of pruritus severity and wheal numbers over 4 weeks of duration, which is similar to a study comparing the efficacy of levocetirizine with desloratadine. [15] Results regarding UAS changes in olopatadine treatment group in this study were similar to a study done by Godse. [29]

Both drugs levocetirizine and olopatadine produced sedation in the patients of this study. Sedation with these drugs has also been reported in some previous studies. [9],[30],[31]

In our study, there were subjective variations in the level of sleepiness in both groups. Some subjects, though small in number, suffered different levels of sedation, while others did not complain of sedation at all. Probably, this side-effect resulted in the withdrawal of patients from the study. The VAS score decreased at subsequent visit, which might be due to development of tolerance to sedation.

This study has some limitations. All visits and examination of patients were carried out in the outpatient departments of medical college hospital; therefore, the results obtained are not based on primary care setting. We did not use any laboratory findings as assessment tool for the treatment, which could be better to indicate the changes in the skin pathology with antihistamines. In our study, all parameters are based on subjective interpretation, and there may be discrepancies between the subjective and objective assessment. Furthermore, this study is indicative rather than conclusive, so more studies are needed in a large population to establish the usefulness of these antihistamines in the

treatment of chronic urticaria.

Conclusion

It can be concluded that levocetirizine showed slight better or equal improvement in disease activity and quality of life. This drug was also associated with significantly lesser side-effects in comparison to olopatadine. Hence, levocetirizine is a marginally superior drug for the long-term treatment of CIU in Indian population.

Acknowledgments

The authors wish to express their thanks to Dr. Ashok Meherda, Professor and Head, Department of Dermatology, JLN Medical College and Associated Hospital Ajmer, for his kind permission and providing facilities to carry out this work in the department. We also convey thanks to Dr. Chabbil Jatav for his help in statistics. The funding source for this study was the institution grant.

References

1. Yadav S, Upadhyay A, Bajaj AK. Chronic urticaria: An overview. *Indian J Dermatol* 2006;51:171-7.  [Full Text](#)
2. O'Donnell BF, Lawlor F, Simpson J, Morgan M, Greaves MW. The impact of chronic urticaria on the quality of life. *Br J Dermatol* 1997;136:197-201. 
3. Prasad PS. Urticaria. *Indian J Dermatol Venereol Leprol* 2001;67:11-20. 
4. Tedeschi A, Airaghi L, Lorini M, Asero R. Chronic urticaria: A role for newer immunomodulatory drugs? *Am J Clin Dermatol* 2003;4:297-305. 
5. Dubuske LM, Seal B, Brown MC. Pharmacoeconomics of levocetirizine in allergic rhinitis and chronic idiopathic urticaria: Considerations for the USA. *Expert Rev Pharmacoecon Outcomes Res* 2008;8:233-41. 
6. Morita K, Koga T, Moroi Y, Urabe K, Furue M. Rapid effects of olopatadine hydrochloride on the histamine-induced skin responses. *J Dermatol* 2002;29:709-12. 
7. Ohmori K, Ikemura T, Kobayashi H, Mukouyama A. Pharmacological, pharmacokinetic and clinical properties of olopatadine hydrochloride' (olopatadine), an antiallergic drug. *Nihon Yakurigaku Zasshi* 2001;118:51-8. 
8. Walsh GM. The anti-inflammatory effects of levocetirizine: Are they clinically relevant or just an interesting additional effect? *Allergy Asthma Clin Immunol* 2009;5:14. 
9. Maiti R, Jaida J, Rahman J, Gaddam R, Palani A. Olopatadine hydrochloride and rupatadine fumarate in seasonal allergic rhinitis: A comparative study of efficacy and safety. *J Pharmacol Pharmacother* 2011;2:270-6. 
10. Jeff W. How to determine a sample size: Tipsheet# 60, University Park, PA: Penn State Cooperative Extension; 2001. Available from: <http://www.extention.psu.edu/evaluation/pdf/TS60.pdf>. [Last accessed on 2011 Jun 20]. 
11. Zuberbier T, Bindslev-Jensen C, Canonica W, Grattan CE, Greaves MW, Henz BM, *et al*. EAACI/GA2LEN/EDF guideline: Management of urticaria. *Allergy* 2006;61:321-31. 
12. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994;19:210-6. 
13. Lennox RD, Leahy MJ. Validation of the Dermatology Life Quality Index as an outcome measure for urticaria-related quality of life. *Ann Allergy Asthma Immunol* 2004;93:142-6. 
14. Izumi N, Mizuguchi H, Umehara H, Ogino S, Fukui H. Evaluation of efficacy and sedative profiles of H (1) antihistamines by large-scale surveillance using the visual analogue scale (VAS). *Allergol Int* 2008;57:257-63. 
15. Potter PC, Kapp A, Maurer M, Guillet G, Jian AM, Hauptmann P, *et al*. Comparison of the efficacy of levocetirizine 5 mg and desloratadine 5 mg in chronic idiopathic urticaria patients. *Allergy* 2009;64:596-604. 
16. Shih MY, Hsu JY, Weng YS, Fu LS. Influence of cetirizine and levocetirizine on two cytokines secretion in human airway epithelial cells. *Allergy Asthma Proc* 2007;28:582-91. 
17. Thomson L, Blaylock MG, Sexton DW, Campbell A, Walsh GM. Cetirizine and levocetirizine inhibit eotaxin-induced eosinophil transendothelial migration through human dermal or lung microvascular endothelial cells. *Clin Exp Allergy* 2002;32:1187-92. 

- [18.](#) Jang YJ, Wang JH, Kim JS, Kwon HJ, Yeo NK, Lee BJ. Levocetirizine inhibits rhinovirus-induced ICAM-1 and cytokine expression and viral replication in airway epithelial cells. *Antiviral Res* 2009;81:226-33. 
- [19.](#) Caproni M, Volpi W, Giomi B, Torchia D, Del Bianco E, Fabbri P. Cellular adhesion molecules in chronic urticaria: Modulation of serum levels occurs during levocetirizine treatment. *Br J Dermatol* 2006;155:1270-4. 
- [20.](#) Mahmoud F, Arifhodzic N, Haines D, Novotney L. Levocetirizine modulates lymphocyte activation in patients with allergic rhinitis. *J Pharmacol Sci* 2008;108:149-56. 
- [21.](#) Yanni JM, Miller ST, Gamache DA, Spellman JM, Xu S, Sharif NA. Comparative effects of topical ocular anti-allergy drugs on human conjunctival mast cells. *Ann Allergy Asthma Immunol* 1997;79:541-5. 
- [22.](#) Yamauchi Y, Fujikura T, Shimosawa T. The effect of H1 antagonists carebastine and olopatadine on histamine induced expression of CC chemokines in cultured human nasal epithelial cells. *Allergol Int* 2007;56:171-7. 
- [23.](#) Miyake K, Ohmori K, Ishii A, Karasawa A. Inhibitory effect of olopatadine hydrochloride (KW-4679), a novel antiallergic drug, on peptide leukotriene release from human eosinophiles. *Allergol Int* 2001;50:113-6. 
- [24.](#) Miki I, Kusano A, Ohta S, Hanai N, Otoshi M, Masaki S, *et al.* Histamine enhanced the TNF-alpha-induced expression of E-selectin and ICAM-1 on vascular endothelial cells. *Cell Immunol* 1996;171:285-8. 
- [25.](#) Fukuishi N, Matsuhisa M, Shimono T, Murata N, Iwanaga M, Sagara H, *et al.* Inhibitory effect of olopatadine on antigen-induced eosinophil infiltration and the LFA-1 and Mac-1 expression in eosinophils. *Jpn J Pharmacol* 2002;88:463-6. 
- [26.](#) Kozel MM, Sabroe RA. Chronic urticaria: Aetiology, management and current and future treatment options. *Drugs* 2004;64:2515-36. 
- [27.](#) Khan S, Lynch N. Efficacy of montelukast as added therapy in patients with chronic idiopathic urticaria. *Inflamm Allergy Drug Targets* 2012;11:235-43. 
- [28.](#) Maurer M, Rosén K, Hsieh HJ, Saini S, Grattan C, Giménez-Arnau A, *et al.* Omalizumab for the treatment of chronic idiopathic or spontaneous urticaria. *N Engl J Med* 2013;368:924-35. 
- [29.](#) Godse KV. Olopatadine in chronic idiopathic urticaria. *Indian J Dermatol* 2009;54:191-2. 
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- [30.](#) Layton D, Wilton L, Boshier A, Cornelius V, Harris S, Shakir SA. Comparison of the risk of drowsiness and sedation between levocetirizine and desloratadine: A prescription-event monitoring study in England. *Drug Saf* 2006;29:897-909. 
- [31.](#) Takahashi H, Ishida-Yamamoto A, Iizuka H. Effects of bepotastine, cetirizine, fexofenadine, and olopatadine on histamine-induced wheal-and flare-response, sedation, and psychomotor performance. *Clin Exp Dermatol* 2004;29:526-32. 

Figures

[\[Figure 1\]](#), [\[Figure 2\]](#), [\[Figure 3\]](#), [\[Figure 4\]](#), [\[Figure 5\]](#), [\[Figure 6\]](#)

Tables

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Online since 10 October, 2012



ISSN: Print - 0972-6691, Online - 2320-4745

Age group↓	Group-A (levocetirizine) <i>n</i> = 65			Group-B (olopatadine) <i>n</i> = 65		
	Male	Female	Total patients	Male	Female	Total patients
11-20	2	3	5	0	3	3
21-30	4	6	10	2	8	10
31-40	9	18	27	10	16	26
41-50	6	12	18	8	12	20
51-60	2	1	3	1	2	3
61-70	1	1	2	1	2	3
Total	24	41	65	22	43	65
Sex ratio (female:male)	1.71:1			1.95:1		
Mean age (years)	36.82			37.18		

Visits	Wheal score	Pruritus score	Total score (UAS)
0 week			
Levocetirizine	2.25 ± 0.07	2.17 ± 0.06	4.42 ± 0.09
Olopatadine	2.29 ± 0.07	2.20 ± 0.06	4.49 ± 0.09
2 weeks			
Levocetirizine	0.74 ± 0.06	0.78 ± 0.06	1.52 ± 0.10
Olopatadine	0.52 ± 0.08	0.37 ± 0.07	0.89 ± 0.13
4 weeks			
Levocetirizine	0.45 ± 0.07	0.37 ± 0.07	0.82 ± 0.11
Olopatadine	0.32 ± 0.07	0.33 ± 0.07	0.65 ± 0.12
6 weeks			
Levocetirizine	0.15 ± 0.05	0.17 ± 0.05	0.32 ± 0.09
Olopatadine	0.15 ± 0.05	0.23 ± 0.06	0.38 ± 0.11

Values are expressed as mean $\pm$ SE of mean. UAS - Urticarial activity score, SE - Standard error

Visits	Group-A (levocetirizine) <i>n</i> = 65	Group-B (olopatadine) <i>n</i> = 65	Group A versus Group B (ANCOVA test)
0 week	4.42 ± 0.09	4.49 ± 0.09	
After 2 weeks	1.52 ± 0.10	0.89 ± 0.13	<i>P</i> < 0.05
0 week versus 2 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	
After 4 weeks	0.82 ± 0.11	0.65 ± 0.12	<i>P</i> > 0.05
0 week versus 4 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	
After 6 weeks	0.32 ± 0.09	0.38 ± 0.11	<i>P</i> > 0.05
0 week versus 6 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	

Values are expressed as mean ± SE of mean. SE: Standard error, UAS - Urticarial activity score

Visits	Group-A (levocetirizine) <i>n</i> = 65	Group-B (olopatadine) <i>n</i> = 65	Group A versus Group B (ANCOVA test)
0 week	0.00 ± 0.00	0.00 ± 0.00	
After 2 weeks	1.30 ± 0.31	1.64 ± 0.32	<i>P</i> > 0.05
0 week versus 2 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	
After 4 weeks	1.02 ± 0.26	1.48 ± 0.30	<i>P</i> > 0.05
0 week versus 4 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	
After 6 weeks	0.96 ± 0.26	1.46 ± 0.29	<i>P</i> > 0.05
0 week versus 6 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	

Values are expressed as mean ± SE of mean. SE - Standard error, ANCOVA - Analysis of covariance, VAS - Visual analog scale

Visits	Group-A (levocetirizine) <i>n</i> = 65	Group-B (olopatadine) <i>n</i> = 65	Group A versus Group B (ANCOVA test)
0 week	10.32 ± 0.42	10.66 ± 0.40	
After 6 weeks	1.49 ± 0.21	1.85 ± 0.22	<i>P</i> > 0.05
0 week versus 6 weeks (paired <i>t</i> -test)	<i>P</i> < 0.05	<i>P</i> < 0.05	

Values are expressed as mean ± SE of mean. DLQI - Dermatological life quality index, SE - Standard error, ANCOVA - Analysis of covariance

ADR	Group-A (levocetirizine) <i>n</i> = 65			Group-B (olopatadine) <i>n</i> = 65		
	Mild	Moderate	Total patients	Mild	Moderate	Total patients
Somnolence	3	8	11	7	11	18
Fatigue	3	3	6	4	3	7
Myalgia	1	0	1	1	2	3
Cough	1	0	1	0	0	0
Headache	0	2	2	2	0	2
Throat pain	0	0	0	4	0	4
Grand total (%)			21 (32.3)			34 (52.3)
Group-A versus Group-B Incidence (Chi-square test)	<i>P</i> < 0.05					

ADR - Adverse drug reaction

No. of patients enrolled
 $n=154$

Randomization
written informed consent
taken

Group-A (Levocetirizine)
Pts enrolled for treatment $n=77$

Group -B (Olopatadine)
Pts enrolled for treatment $n=77$

Patients received levocetirizine 5 mg OD
& followed up every 2 weeks

Patients received olopatadine 5 mg BD
& followed up every 2 weeks

Loss to follow up-4
decline-3
No treatment response-3
Total Pts-10

Loss to follow up-6
decline-2
No treatment response-4
Total Pts-12

Patients remained-67

Patients remained-65

No. of patients analyzed-65

No. of patients analyzed-65

