Print ISSN: 2319-2003 | Online ISSN: 2279-0780

IJBCP International Journal of Basic & Clinical Pharmacology

DOI: http://dx.doi.org/10.18203/2319-2003.ijbcp20192568

Original Research Article

Efficacy of Levocetirizine, Prednisolone and their combination in the treatment of chronic urticaria: a comparative study

Kanhaiah More[1]*, B. Samskar[2], G. B. Simpson[2]

[1]Department of Pharmacology, Prathima Institute of Medical Sciences, Karimnagar, Telangana, India
[2]Department of Pharmacology, Katuri Medical College, Guntur, Andhra Pradesh, India

Received: 26 April 2019
Revised: 23 May 2019
Accepted: 27 May 2019

***Correspondence to:**
Dr. Kanhaiah More,
Email: kanhaiahmore@gmail.com

ABSTRACT

Background: Urticaria results from many different stimuli and numerous factors like immunologic, non-immunologic, genetic and modulating factors which are involved in its pathogenesis and ultimately converge on mast cells and basophils to release mediators and produce urticarial lesions. This study is aimed to compare the therapeutic effectiveness of Levocetirizine (newer generation H1 blocker), prednisolone (glucocorticoid) and their combination in the treatment of chronic urticaria.
Methods: Group I (34 patients received tab Levocetirizine alone 5mg daily for 15 days). Group II (33 patients received tab Prednisolone alone 20mg /day for initial 3 days and later dose was gradually tapered by 5mg /day every 3 days to 5mg/day with total duration of 12 days). Group III (33 patients received the combination of Levocetirizine and Prednisolone).
Results: The Group -I patients average eosinophil count before and after treatment was 4±1.4 and 2.4±0.8 respectively, with an average difference of 1.7±1.3. In Group - II patients average eosinophil count before and after treatment was 4.0±1.1 and 2.5±0.3 respectively, with an average difference of 1.5±1.1. In the Group - III patients the average eosinophil count before and after treatment was 4.3±1.0 and 2.1±1.0 with an average difference of 2.2±1.3. In G-I (n=34).
Conclusions: Statistical analysis of the present study showed that the combination of Levocetirizine and prednisolone therapy was significantly ($P<0.05$) greater than prednisolone alone therapy and improvement with Levocetirizine alone (79%) was almost similar to combination therapy (85%).

Keywords: Antihistamine, Chronic urticaria, Levocetirizine, Prednisolone

INTRODUCTION

Urticaria is a transient vascular reaction pattern characterized by circumscribed, edematous, itchy lesions usually lasting for few hours to one or two days. It is one of the commonest conditions and poses the problems not only to the patients suffering from it but also a therapeutic challenge to the treating physician in view of its multiple etiological factors.

Chronic urticaria is defined by recurrent episodes occurring at least twice a week for 6 weeks, possibly lasting for many months, or many years.[1-3] Chronic urticaria may be caused by innumerable factors like foods, drugs, inhalant allergens, infections, insect and arthropod bites, contactants, internal diseases, complement activation and immune complex process, psychogenic factors, genetic abnormalities and physical agents which may lead to dermographism, pressure urticaria and solar urticaria.[4]

Chronic urticaria is frequently flared by intercurrent viral infections. This may be a nonspecific effect of circulating pro-inflammatory cytokines or chemokines, either acting on mast cell or leading to expression of adhesion molecules on endothelial cells.[5] Systemic viral infections associated with urticarial eruptions include Hep B, less commonly Hep A, infectious mononucleosis and coxsackie infections.[4] Chronic urticaria affects predominantly adults. It is approximately twice as common in women as in men.[6] And in most of the cases, cause of chronic urticaria cannot be determined and termed as chronic idiopathic urticaria.

The urticarial lesions result from localized vasodilation and transudation of fluid from capillaries and small blood vessels. This occurs due to severe pathophysiological mechanisms including both immunologic and non-immunologic and ultimately converging on mast cells and basophils to release mediators and produce urticarial lesions. Histamine derived from mast cells is a major mediator of urticaria and also other mediators like kinin, 5-hydroxytyptamine, prostaglandins have been demonstrated to act in the production of urticarial rash.

Histamine acts through two classes of receptors H_1 and H_2 in the skin to produce erythema, wheal and flare and also pruritus. Occurrence of wheal and flare in chronic urticaria is widespread and are intensely itchy. Chronic urticaria frequently follows a remitting and relapsing course and is worse at night.[7]

Histamine has an acknowledged key role in production of urticaria, hence antihistamines are considered the drug of choice in the therapy most cases of urticaria.[8] H_1 antihistamines with a low potential for sedation are the most important first line treatment. Recently new non-sedating H_1 antihistamines are advantageous in chronic urticaria because of their non-sedating nature, efficacy and convenience. Levocetirizine is one of the new nonsedating antihistamine. It has excellent clinical response in the treatment of chronic urticaria.[9]

Various other modalities of treatment are undertaken to control refractory chronic urticaria. Combination of H_1 and H_2 antihistamines has been tried and found beneficial. Systemic prednisolone in doses of 0.5 to 1 mg/kg/ day are effective in suppressing most cases of chronic urticaria.[10] When all other measures do not adequately control chronic urticaria, a course of systemic corticosteroids is given alone or in combination with H_1 antihistamines. In view of the paucity of the studies, we thought it is worthwhile to make an attempt to do a comparative study of newer generation of H_1 antihistamine, glucocorticoid and their combination in the treatment of chronic urticaria.

METHODS

The study material consisted of 100 cases of chronic urticaria attending the department of Skin and V.D. Katuri Medical College and Hospital.

Of 100 cases of chronic urticaria, each patient was selected randomly and grouped into 3 groups, group I, group II and group III. Group I contains 34 patients and group II and group III contains 33 patients each.

These three groups received the following treatment:

- Group I- received tab Levocetirizine alone 5 mg (newer antihistamine) daily for 15 days.
- Group II - received tab Prednisolone alone 20 mg/day for initial 3 days and later dose was gradually tapered by 5 mg/day every 3 days to 5 mg/day. Duration of treatment -12 days.
- Group III - received the combination of Levocetirizine and Prednisolone. The dose and dosage schedule was same as in Group I and II.

Follow up

Done after 2 weeks of the treatment

a) Improvement in signs and symptoms of urticaria was graded as follows:

- Grade I- complete relief from itching and skin lesions.
- Group II- skin lesion disappeared completely; itching decreased slightly.
- Group III -.no improvement of both itching / skin lesions.

b) Clinical tests which were found positive before treatment and the blood investigations total leucocyte count (TC), differential count (DC) and absolute eosinophil count AEC were repeated.

Statistical analysis

Interval data are expressed as Mean±1 SD and categorical data in percentage. Since haematological counts showed moderately skewed, a non- parametric method, Mann-whitney test was used. Categorical data was analysed by chi-square test. P value of <0.05 was considered significant.

RESULTS

Etiology detected- 63 cases (63%). Etiology not detected (Chronic idiopathic urticaria) -37 cases (37%).

Out of 100 patients of chronic urticaria, chronic idiopathic urticaria (etiology not detected) constituted 37% and aetiology was detected in 63% of patients.

Among 63 patients depending on etiological factors, type of chronic urticaria categorized as Physical urticaria-29 patients (47.03%) [Heat (17.4%), Cold (14.3%), Cholinergic (14.3%)], Drug induced urticaria-15 patients (23.8%), Food induced urticaria-5 patients (7.9%), Parasitic infestation 4 patients (6.3%), Bacterial infection

5 patients (7.9%) Psychogenic-2 patients (3.2%) and contact urticaria-3 patient (4.87%). Among 15 cases of Drug induced urticaria, drugs that induced urticaria was NSAIDS, in maximum number of patients 13 (20.6%) followed by antibiotics (pencillin and ciprofloxacin) in one patient each (1.6%). In one patient, urticaria exacerbated for both NSAID and Doxycycline (Figure 1 and Table 1).

Table 1: Types of chronic urticaria.

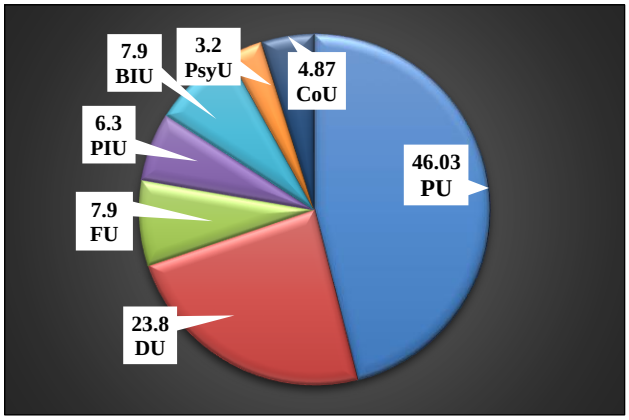
Types of urticaria	No. of cases	Percentage	
Physical Urticaria	29		
Heat	11	17.4	46.03
Cold	09	14.3	
Cholinergic	09	14.3	
2) Drug induced urticaria	15		
NSAIDS	13	20.6	23.8
Pencillin	01	1.6	
Ciprofloxacin	01	1.6	
Doxycyclin	01		
3) Food	05	7.9	
4) Parasitic infestation	04	6.3	
5) Bacterial infection	05	7.9	
6) Psychogenic	02	12	
7) Contact urticaria	03	4.87	
Total	63	100.0	

Degree of pruritus was of moderate degree in majority 65% of patients. It was of severe degree in 28% and 7% of the patients experienced mild degree of pruritus (Table 2).

Personal history of atopy alone was seen in 7 patients, whereas family history of atopy present in 4 patients. Out of this in one patient there was both personal and family history of atopy (Table 3).

Table 2: Degree of pruritus associated with chronic urticaria.

Severity	No. of patients	Percentage
Mild	7	7
Moderate	65	65
Severe	28	28
Total	100	100



PU: Physical urticaria, DU: Drug induced urticaria, FU: Food induced urticaria, PIU: Parasitic infestation induced urticaria, BIU: Bacterial infection induced urticaria, PsyU: Psychogenic urticaria, CoU: Contactant urticaria. Percentage of different types of chronic urticaria (out of 63 cases)

Figure 1: Types of chronic urticaria (percentage).

Table 3: Association of atopy.

History of atopy	No. of cases
Personal history of atopy	7
Family history of atopy	4
Total	11

Table 4: Comparison of total leucocyte count (TC), differential count of neutrophil (n) and lymphocytes (l) before and after treatment in groups I, II and III.

Variable	G-I(L)			G - II (P)			G-III (L + P)			Difference between groups*		
	Before	After	Diff	Before	After	Diff	Before	After	Diff	G(I-II) (L-P)	G(I-III) (L-L+P)	G (II-III) (PL+P)
TC	7648±1227	7285±1185	364±307	7313±1085	7031±1100	281±24 1	7038±1164	6619±1228	419±307	NS 0.44**	NS 0.48	NS 0.13
N	62±6	60±9	2±3	63±7	60±4	2±3	64±6	61±8	3±4	NS 0.73	NS 0.17	NS 0.32
L	33±5	37±5	(-)4±3	33±7	36±6	(-)3±3	32 ±7	37±6	(-)5±5	NS 0.43	NS 0.41	NS 0.15

* Mann- whitney test, P>0.05 Not Sig., $(^{-})^{ve}$ sign indicates increase in the counts, ** P-Values

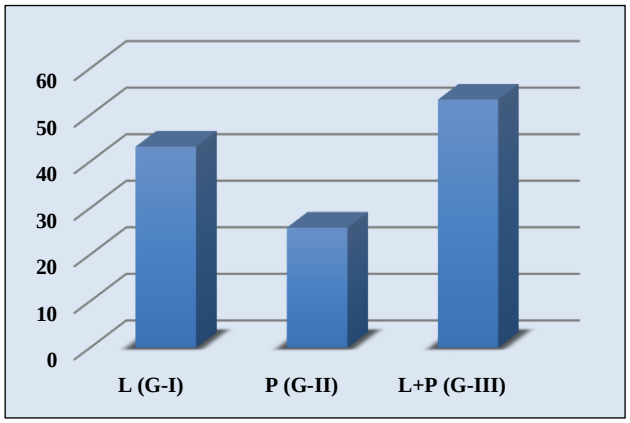
Table 5: Comparison of eosinophil count before and after treatment in groups I, II and III.

Variable	G-I(L)			G - II (P)			G-III (L+P)			Difference between groups *		
	Before	After	Diff	Before	After	Diff	Before	After	Diff	G(I-II) (L-P)	G(I - III) (L-L+P)	G(II-III) (P-L +P)
E	4.0±1.4	2.4±0.8	(-)1.6±1.3	4.0±1.1	2.5±0.3	(-)1.5±1.1	4.3±1.0	2.1±1.0	(-)2.2±1.3	NS	NS	P <0.05 (S)

* Mann-whitney test. P < 0.05 Sig (S), P> 0.05 Not sig. (NS), (-) Sign indicates reduction in counts.

Table 6: Comparison of dermographism test before and after treatment in groups I, II and III.

Group	No. of cases	Positive for Dermographism test			
		Before	After	Diffe-rence	% Reduction
G-I (L)	34	16	09	07	43.7
G-II (P)	33	21	18	03	14.2
G-III (L+P)	33	13	07	06	46.2



Mean reduction in absolute eosinophil count (AEC) after treatment in all 3 groups. Mean Reduction in AED-L-Levocetirizine 43.2, P-Prednisolone 25.8, L + P-Levocetirizine + Prednisolone 53.3.

Figure 2: Mean reduction in AEC.

In the Group - I, AEC showed a average reduction of 43.2±47.6 after treatment, it was 25.8±36.7 and 53.3±51.9 respectively i.e., maximum reduction was observed in Group III, followed by Group I and Group II (Figure 2). Mean reduction in the AEC was significantly (P<0.05) greater with Group - III than with Group II and same was not significantly different between Group I and II and Group I and III (Figure 2).

The comparison of total count (TC), differential counts of neutrophil (N) and lymphocyte (L) before and after treatment in group I, II and III. It was observed that, TC, N and L showed alternation their counts after treatment. Mean difference in these counts were not statistically significant (P>0.05) when compared in between the groups (Table 4).

This comparison of eosinophil count before and after treatment in G-I, G-II, and G-III. In the G-I patients average eosinophil count before and after treatment was 4±1.4 and 2.4±0.8 respectively, with an average difference of 1.7±1.3. In G-II patients average eosinophil count before and after treatment was 4.0±1.1 and 2.5±0.3 respectively, with an average difference of 1.5±1.1. In the G-III patients the average eosinophil count before and after treatment was 4.3±1.0 and 2.1±1.0 with an average difference of 2.2±1.3 (Table 5).

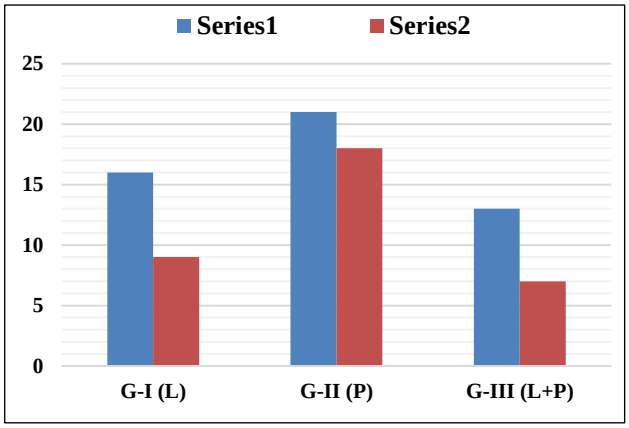


Figure 3: Comparison of positive dermographism test before and after treatment in L (G-I), P (G-II) and L+P (G-III).

In G-I (n=34) positive cases for dermographism test before and after treatment was 16 and 9 respectively i.e. 7 patients (43.7%) out of 16 positive cases showed negative dermographism test after treatment. In G-II (n=33), positive cases before and after treatment was 21 and 18 respectively i.e. 3 patients (14.2%) out of 21 positive cases

showed negative dermographism test. Likewise, in G - III (n=33), positive cases before and after treatment was 13 and 7 respectively i.e., 6 patients (46.2%) of 13 positive cases, showed negative dermographism test (Table 6, Table 7 and Figure 3).

Table 7: Comparison of positive dermographism test before and after treatment in L (G-I), P (G-II) and L+P (G-III).

Group	No. of positive cases	
	Before	After
G-I (L)	16	9
G-II (P)	21	18
G-III (L+P)	13	7

In G-I (n=34), positive cases for exercise-test before and after treatment were, 9 and 2 respectively i.e. 7 patients (77.8%) out of 9 positive cases showed negative exercise - test after treatment. In G-II (n=33) positive cases before and after treatment were 10 and 5 respectively i.e. 5 patients (50%) out of 10 showed negative test after treatment. In G-III (n=33), positive cases before and after treatment were 12 and 1 respectively i.e. 11 (83.3%) out of 12 patients showed negative test after treatment (Table 8).

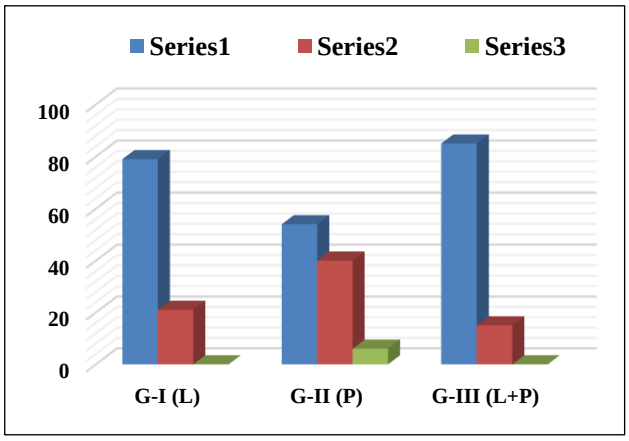


Figure 4: Improvement grading.

Table 8: Comparison of exercise-test before and after treatment in groups I, II and III.

Group	No. of cases	Positive for exercise test			
		Before	After	Difference	% Reduction
G-l(L)	34	09	02	07	77.8
G-II (P)	33	10	05	05	50.0
G-III (L+P)	33	12	01	11	83.3

$X^2 = 5.03$, $P < 0.08$ Not Significant

Table 9: Comparison of ice-cube test before and after treatment in groups I, II and III.

Group	No. of cases	Positive for ice-cube test			
		Before	After	Difference	% Reduction
G-I(L)	34	05	04	01	20.0
G-II (P)	33	03	03	00	00.0
G-III (L+P)	33	03	02	01	33.3

Table 10: Improvement Grading.

Groups	G-I (L)	G-II (P)	G-III (L+P)
I	79	54	85
II	21	40	15
III	0	6	0

L-Levocetirizine, P-Prednisolone, L+P-Levocetirizine+ Prednisolone

The grade of improvement following treatment in three groups. In G - I) (n = 34), maximum number of patients 27 (79%) showed grade I improvement and 7 patients (21%) grade II improvement. In G - 11 (n = 33), 18 (54%), 13 (40%) and 2 (6%) patients showed grade I, grade II and grade III improvement respectively. In G - III (n= 33), maximum number of patients 28 (85%) showed grade I improvement and 5 (15%) patients grade II improvement (Table 10).

Table 11: Improvement grading in groups I, II and III.

Grade	G-I (L) n (%)	G-II (P) n (%)	G-III (L+P) n (%)
I	27 (79)	18 (54)	28 (85)
II	07 (21)	13 (40)	5 (15)
III	-	02 (6)	-
Total	34	33	33

GI vs II (L vs P), $x^2=5.6$, P=0.06 Not Sig, GI vs III (L vs L+P), $x^2=0.4$, P = 0.56 Not Sig, GII vs III (P vs L+P), $x^2=7.2$, P <0.05 Sig.

In G-I (n=34), positive cases for Ice - cube test before and after treatment were 5 and 4 respectively i.e. 1 patient (20%) out of 5 positive cases showed negative ice-cube test after treatment. In G-II (n=33), positive cases before and after treatment were 3 and 3 respectively i.e. none of the patient showed negative test after treatment. In G-III (n=33), positive cases before and after treatment were 3 and 2 respectively i.e., 1 patient (33.3%) showed negative test after treatment (Table 9).

Reveals the grade of improvement following treatment in three groups. In G-I (n= 34), maximum number of patients 27 (79%) showed grade I improvement and 7 patients (21%) grade II improvement. In G-11 (n=33), 18 (54%), 13 (40%) and 2 (6%) patients showed grade I, grade II and grade III improvement respectively. In G-III (n=33), maximum number of patients 28 (85%) showed grade I improvement and 5 (15%) patients grade II improvement (Table 11) (Figure 4).

DISCUSSION

Comparison of total leucocyte count (TC), differential count of neutrophil (N) and lymphocyte (l) before and after treatment in groups I, II and III

In the present study, comparison of TC, differential count of neutrophil and lymphocyte before treatment in all the three groups (GI, GII, and GIII), showed slight variations in their counts after treatment and it was not statistically significant when compared in between the groups.

There are no studies or reports available to compare the present study.

Comparison of eosinophil count before and after treatment in groups I, II and III

In the present study, comparison of eosinophil count before and after treatment in Group-I, Group-II and Group-III was done. In the Group I, eosinophil count showed a average reduction of 1.7±1.3 after treatment, it was 1.5±1.1 and 2.2±1.3 in Group II and Group III respectively i.e., maximum reduction was significantly (P<0.05) greater with Group-III than with Group II and same was not significantly different between Group I and II and Group I and III.

Whether Levocetirizine has an effect on in vivo eosinophil migration and chemical mediator release is unclear. The potential action of Levocetirizine on eosinophil may result from either by a direct effect on eosinophils or on indirect effect through other cell-populations, such as mast cells by inhibiting the release of chemotractant and activating factors for eosinophils.

Chrousos et al, stated the mechanism of prednisolone in chronic urticaria, is due to its immunosuppressive property i.e. by decreasing eosinophils and basophils in the circulation as a result of their movement from the vascular bed to lymphoid tissue.[11]

Thus, the above observation of present study, are probably due to the same mechanism of action as the above mentioned studies.

There are no studies available to compare with present study. By statistical analysis it is found that combination (Levocetirizine and Prednisolone) therapy was more effective (P< 0.05) in reducing eosinophil count compared to prednisolone alone therapy whereas Levocetirizine alone was equally effective as the combination therapy.

Comparison of absolute eosinophil count (AEC) before and after treatment in groups I, II and III

In the present study, comparison of AEC before and after treatment in Group-I, Group-II and Group III was done.

In the Group-I, AEC showed an average reduction of 43.2±47.6 after treatment, it was 25.8±36.7 and 53.3±51.9 respectively i.e. maximum reduction was observed in Group III, followed by Group I and Group II (Figure 2).

Mean reduction in the AEC was significantly (P <0.05) greater with Group-III than with Group II and same was not significantly different between Group I and II and Group I and III.

The mechanism of action of Levocetirizine and prednisolone in reducing AEC is discussed already in previous chart.

The present study suggests that, the combination (Levocetirizine and prednisolone) therapy was more effective (P <0.05) in reducing AEC compared to prednisolone alone therapy and Levocetirizine alone was equally effective as the combination therapy.

Comparison of dermographism test before and after treatment in groups I, II and III

In the present study, comparison of dermographism test before and after treatment in Group I, Group II and Group - III was done.

It was observed that in Group I (n=34), 7 patients out of 16 positive cases showed negative dermographism test after treatment Likewise in Group II and Group III it was 3 out of 21 and 6 out of 13 positive cases which turned to negative dermographism after treatment.

So, on observation maximum reduction of positive cases was seen in Group-in (46.2%), followed by Group I (43.7%) and Group II (14.2%). Percentage of reduction in dermographism positive cases was significantly (P<0.05) greater with Group -III than with Group -II and the same was not significantly different between Group I and II and Group I and III.

Rose et al, and Breathnach et al, have demonstrated in their studies that, stroking the skin (Dermographism test) produces an immediate allergic reaction with subsequent histamine release.[12,13] Mathews et al, observed the significant decrease in wheeling (negative dermographism) with antihistamine pretreatment.[14] The above studies are almost in concurrence with results of Levocetirizine (Group-I) in the present study. The probable mechanism of prednisolone alone therapy (Group-II) in reducing the positive dermographism cases is, its indirect action of decreasing histamine release by decreasing basophils in circulation.[11]

There are no studies available to compare with present study so by clinical effectiveness and statistical analysis, it can be suggested that combination (L+P) therapy was more effective ($P < 0.05$) than prednisolone alone whereas Levocetirizine alone was equally effective as the combination therapy in the treatment of dermographism or Factitious urticaria.

Comparison of exercise-test before and after treatment in groups I, II and III

In the present study comparison of exercise - test before and after treatment in Groups I, II and III was done.

It was observed that in Group I (n=34), 7 patients out of 9 positive cases showed negative exercise test after treatment. Likewise, in Group II and Group III it was 5 out of 10 and 11 out of 12 positive cases became negative after treatment. So, on observation maximum reduction of positive cases was seen in Group III (83.3%), followed by Group I (77.8%) and Group II (50.0%).

Percentage of reduction in positive cases showed no statistical significance in between these Groups.

Kaplan and Beaven et al, have detected elevated levels of serum histamine and eosinophil and neutrophil chemotactic activity- respectively, after experimental challenge in cholinergic urticaria patients.[15]

The above mentioned study is almost in concurrence with the results of Levocetirizine in the present study. The reduction of positive exercise cases with prednisolone alone therapy, probably is due to same mechanism as discussed under dermographism test.[11]

There are no studies available to compare with present study and these results suggests that combination therapy (Levocetirizine+Prednisolone) and Levocetirizine alone was found clinically significantly effective than prednisolone alone therapy in cholinergic urticaria.

Comparison of ice-cube test before and after treatment in groups I, II and III

In the present study comparison of Ice-Cube test before and after treatment was done in Groups I, II and III.

It was observed that in Group I (n=34), 1 patient out of 5 positive cases showed negative ice-cube test after treatment. Likewise, in Group II and Group III it was none out of 3 and 1 out of 3 positive cases turned to negative after treatment, So, on observation maximum reduction of positive cases was seen in Group III (33.3%), followed by Group I (20.0%) and Group II (0.0%).

Kaplan and Beaven et al, and Johnston et al, demonstrated histamine in the blood during systemic hypothermia.[15,16]

Wasserman et al, studies detected neutrophil and eosinophil chemotactic factor in-the circulation associated with increased histamine levels in cold urticaria.[17]

Sigler et al, proved $H_{1:}$ antihistamines (Cyproheptadine being more effective) moderately satisfactory and prednisone improves cold urticaria (only pruritius) except whealing or erythema.[18]

The above mentioned studies are almost in concurrence with the present study regarding the mechanism of action. There are no studies to compare with present study and results suggests that combination (Levocetirizine+Prednisolone) therapy and Levocetirizine alone therapy found to be clinically significant than prednisolone alone therapy in the treatment of Cold urticaria.

Improvement grading in groups I, II and III

In the present study, improvement grading after treatment in three groups were as follows; in Group I (n=34), maximum number of patients 27 (79%) and 7 (21%) patients showed grade I and grade II improvement respectively, in Group II (n=33), 18 (54%), 13 (40%) and 2 (6%) patients showed grade I, grade II and grade III improvement Respectively and in Group III (n=33), maximum number of patients 28 (85%) and 5 (15%) patients showed grade I and grade II improvement respectively. Above analysis showed that improvement was better in Group III, followed by Group I and Group II. Comparatively grade I improvement was significantly ($P<0.05$) greater with Group EI than with Group II, and the same was not statistically significant in between Group I and II ($P=0.06$) and Group I and III ($P=0.56$).

Statistical analysis of the present study showed that the combination of Levocetirizine and prednisolone therapy was significantly ($P < 0.05$) greater than prednisolone alone therapy and improvement with Levocetirizine alone (79%) was almost similar to combination therapy (85%).

The total leucocyte count, differential counts of neutrophils and lymphocytes before and after treatment did not show any significance. There was significant reduction in the eosinophil count ($P < 0.05$) after treatment in the group treated with combination of Levocetirizine and prednisolone compared to prednisolone group whereas

Levocetirizine group was equally effective as the combination therapy.

Similarly, the group treated with the combination (L+P) showed significant reduction in absolute eosinophil count (AEC) after treatment.

There was a significant reduction in dermographism in patients treated with the combination of Levocetirizine and prednisolone group ($P < 0.05$) compared to prednisolone group and Levocetirizine group showed better response similar to combination group.

Effect of exercise was considerably reduced in patients treated with combination (L+P) 83.3% and Levocetirizine alone 77.8%.

Similarly, Ice-Cube test showed better results 33.3% and 20.0% in combination (L+P) group and Levocetirizine group respectively.

Grade I improvement was seen in 85% of patients with combination (L+P) group and 79% in Levocetirizine group, whereas it was comparatively less in prednisolone group (54%).

Thus, an overall conclusion that can be drawn after making all observations is that, Levocetirizine alone is almost as efficient as combination of Levocetirizine and prednisolone in the treatment of chronic urticaria considering the effect on total eosinophil count, AEC and grading of improvement.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Asero R. Chronic idiopathic urticaria: a family study. Ann Allergy Asthma Immunol. 2002 Aug 1;89(2):195-6.
2. Fusari A, Colangelo C, Bonifazi F, Antonicelli L. The autologous serum skin test in the follow-up of patients with chronic urticaria. Allergy. 2005;60(2):256-8.
3. Mahesh PA, Kushalappa PA, Holla AD, Vedanthan PK. House dust mite sensitivity is a factor in chronic urticaria. Indian J Dermatol Venereol Leprol. 2005 Mar 1;71(2):99.
4. Monroe EW, Jones HE. Urticaria. An updated review. Arch Dermatol. 1977;113:80-90.
5. Black KA, Champion RH. Urticaria. Chapter 47 in Rook, Wilkinson and Ebling. Textbook of Dermatology. Champion RH et al. 6th Ed. London:Black well science. 1998;3:2113-2134.
6. Sibbald RG, Cheema AS, Lozinski A, Tarlo S. Chronic urticaria: evaluation of the role of physical, immunologic, and other contributory factors. Int J Dermatol. 1991 Jun;30(6):381-6.
7. Greaves MW. Chronic urticaria. N Eng J Med. 1995 Jun 29;332(26):1767-72.
8. Monroe EW. Chronic urticaria: review of nonsedating H1 antihistamines in treatment. Journal of the Am Academy Dermatol. 1988 Nov 1;19(5):842-9.
9. Singh-Franco D, Ghin HL, Robles GI, Borja-Hart N, Perez A. Levocetirizine for the treatment of allergic rhinitis and chronic idiopathic urticaria in adults and children. Clin therapeu. 2009 Aug 1;31(8):1664-87.
10. Odom RB, James WD, Berger TG. Erythema and Urticaria. Chapter 7. In: Andrew's Diseases of the Skin. Clinical Dermatology. 9th Ed. Philadelphia: W.B. Saunders Company;2000:160-171.
11. Chrousos GP. Adrenocorticosteroids and Adrenocortical Antagonists. Chapter 39. In: Bertram G. Katzung, Basic and Clinical Pharmocology. 10th Ed. New York:McGraw- Hill;2007:660-678.
12. Rose B. Studies on blood histamine in cases of allergy: I. Blood histamine during wheal formation. Journal of Allergy. 1941 May 1;12(4):327-34.
13. Breathnach SM, Allen R, Ward AM, Greaves MW. Symptomatic dermographism: Natural history, clinical features, laboratory investigations and response to therapy. Clin Experiment Dermatol. 1983 Sep;8(5):463-76.
14. Atthews CN, Kirby JD, James J, Warin RP. Dermographism: reduction in weal size by chlorpheniramine and hydroxyzine. Br J Dermatol. 1973 Mar;88(3):279-82.
15. Kaplan AP, Gray L, Shaff RE, Horakova Z, Beaven MA. In vivo studies of mediator release in cold urticaria and cholinergic urticaria. J Allergy Clin Immunol. 1975 Jun 1;55(6):394-402.
16. Johnston WE, Moss J, Philbin DM, Guiney TE, Sisson JH, Buckley Jr MJ, et al. Management of cold urticaria during hypothermic cardiopulmonary bypass. N Eng J Med. 1982 Jan 28;306(4):219-21.
17. Wasserman SI, Austen KF, Soter NA. The functional and physicochemical characterization of three eosinophilotactic activities released into the circulation by cold challenge of patients with cold urticaria. Clin Exp Immunol. 1982 Mar;47(3):570-8.
18. Sigler RW, Evans III R, Horakova Z, Ottesen E, Kaplan AP. The role of cyproheptadine in the treatment of cold urticaria. J Allergy Clin Immunol. 1980 Apr 1;65(4):309-12.

Cite this article as: More K, Samskar B, Simpson GB. Efficacy of Levocetirizine, Prednisolone and their combination in the treatment of chronic urticaria: a comparative study. Int J Basic Clin Pharmacol 2019;8:1489-96.