

EFFECT OF HISTAGLOBULIN IN ALLERGIC RHINITIS- A PROSPECTIVE STUDYAbhinav Verma¹, Anveksha Sachar², Aditi Singh³, Swetlana Sachar⁴¹Junior Resident, Department of ENT, GSVM Medical College, Kanpur, Uttar Pradesh.²Junior Resident, Department of Pathology, GSVM Medical College, Kanpur, Uttar Pradesh.³Junior Resident, Department of ENT, GSVM Medical College, Kanpur, Uttar Pradesh.⁴Junior Resident, Department of Pathology, GSVM Medical College, Kanpur, Uttar Pradesh.**ABSTRACT****BACKGROUND**

Rhinitis can be defined as congestion of Nasal Mucous Membrane accompanied by Rhinorrhoea and Sneezing. Two elements required for its development are an immunological sensitivity to an allergen and recurrent continuous exposure to it resulting in Histamine release.

Histaglobulin Subcutaneous Injection leads to development of Antibodies to Histamine which will protect for 6 to 18 months against endogenous Histamine released as a result of allergy.

The aim of our study was to evaluate the effect of histaglobulin in improving the symptomatology and quality of life of patients suffering from allergic rhinitis, not responding to conventional treatment modalities.

MATERIALS AND METHODS

A study of 50 patient aged 16 to 50 years of Allergic Rhinitis was conducted in ENT Department of GSVM Medical College, Kanpur for a period of 18 months. Subcutaneous histaglobulin injection was given in doses of 1 ml, 4 Injections at an interval of 4 days for first month, next 4 injections at interval of 4 days in next month, followed by 1 injection per month for the next 3 consecutive months and booster dose after 6 months was given.

RESULTS

The effectiveness of Histaglobulin was evaluated by history, clinical examination, allergic tests like serum IgE estimation and eosinophil count to assess the response to therapy. 23 patients had complete response, 21 had fair response, while 6 had a poor response.

CONCLUSION

Histaglobulin injection is safe and effective treatment for Allergic Rhinitis with no adverse effects. It gives promising results for considerable periods of time, improves the quality of life in allergic rhinitis patients.

KEYWORDS

Histaglobulin, Allergic Rhinitis.

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BACKGROUND

Allergic rhinitis can be defined as congestion of nasal mucous membrane accompanied by rhinorrhoea, sneezing and itching. It is an extremely common condition affecting 20-40 million people in USA and 10-30% of world's population.

Two elements required for its development are an immunological sensitivity to an allergen and recurrent continuous exposure to it.¹⁻¹⁷ Although it is not a life threatening condition but significantly impair the quality of life of patients.² Repeated administration of an allergen extract in order to induce immunological tolerance with

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Corresponding Author:

Dr. Abhinav Verma,

#378/4, Magh Mela,

Godam Colony,

George Town, Allahabad,

E-mail: abhinav1987000000smarty@gmail.com

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reduction in clinical symptoms and requirement for medication during subsequent external allergen exposure is the basis of immunotherapy in patients not responding to conventional treatment modalities.¹²⁻²⁴

Histaglobulin is a sterile preparation containing histamine hydrochloride 0.15mcg,⁴⁻¹⁴ human immunoglobulin 12 mg and sodium thiosulphate 32 mg dissolved in 2 ml solvent.¹⁸ Histaglobulin from antibodies to histamine which will protect for 6-18 months against endogenous histamine.²²

Aims and Objectives

To study the effect of histaglobulin in allergic rhinitis patients to improve the quality of life of AR patients.²² To assess the improvement in sinonasal outcome and symptomatology of allergic rhinitis patients in long term.

MATERIALS AND METHODS

Present study was done on 50 allergic rhinitis patients who presented in the OPD of ENT department GSVM Medical



College, Kanpur during the period of December 2015 to September 2017.

Study Design- Prospective clinical study.

Inclusion Criteria

Patients >16 years and <50 years of age. Patients having allergic for long duration not responding to conventional treatment modalities.

Exclusion Criteria

Patient <16 years and >50 years of age. Patients having allergic rhinitis for short duration patients allergic to immunoglobulin in skin sensitivity test. Patient having pregnancy or immune compromised status.

Method of Collecting Data

As soon as the patient presented to the hospital, a written informed consent along with detailed clinical history was taken from all patients included in the study. History of skin allergy and bronchial asthma, family history and any other history to rule out any comorbid conditions. A detailed clinical examination was carried out as per the proforma prepared which included general examination, complete ENT examination and systemic examination the data was collected and entered into a specially designed case record form.

Method of Administration and Dosing Regimen

After prior sensitivity tests, for drug allergy, 1 ml of subcutaneous histaglobulin injection was given to the patient, 4 injections at an interval of 4 days for first month, next 4 injections at an interval of 4 days next month followed by 1 injection per month for three consecutive months and a booster dose after 6 months was given in our regime.

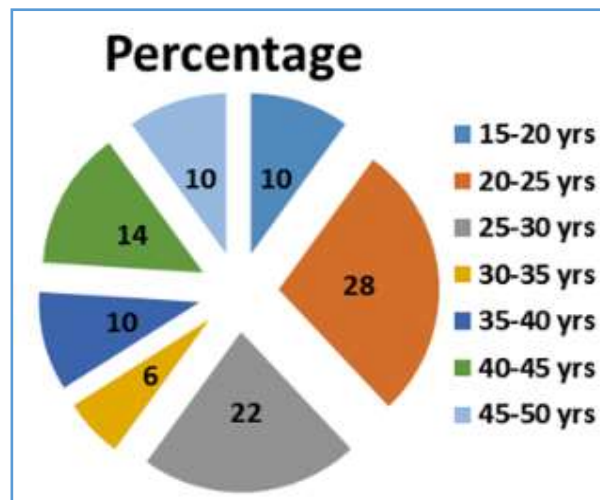
Investigations

- Complete blood count.
- Random blood sugar.
- Serum electrolytes.
- Radiological investigation like x- ray PNS, CT PNS.
- Absolute Eosinophil Count.

Nasal smear eosinophilic count Phadiatop test, serum IgE estimation.¹⁵ Patients were asked to evaluate the quality of life improvements after.³⁻²³ histaglobulin therapy and whether they are benefited or not.²⁶ Then pre-therapy and post therapy assessment of subjective benefits to the patient was analysed, observations were tabulated and statistically evaluated to come to the conclusion.

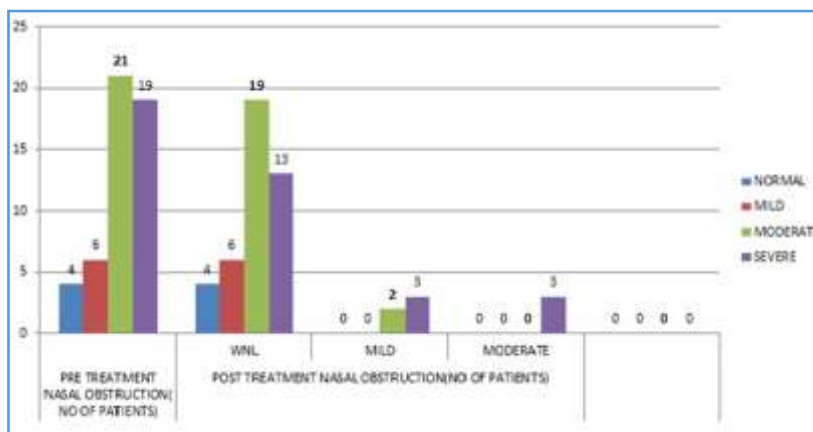
Observation

In this study most of the patients were found to be of younger age i.e. 20-25 years of age. Mean age of patients was 22 years and out of all patients, 42% were male and 58% female patients.



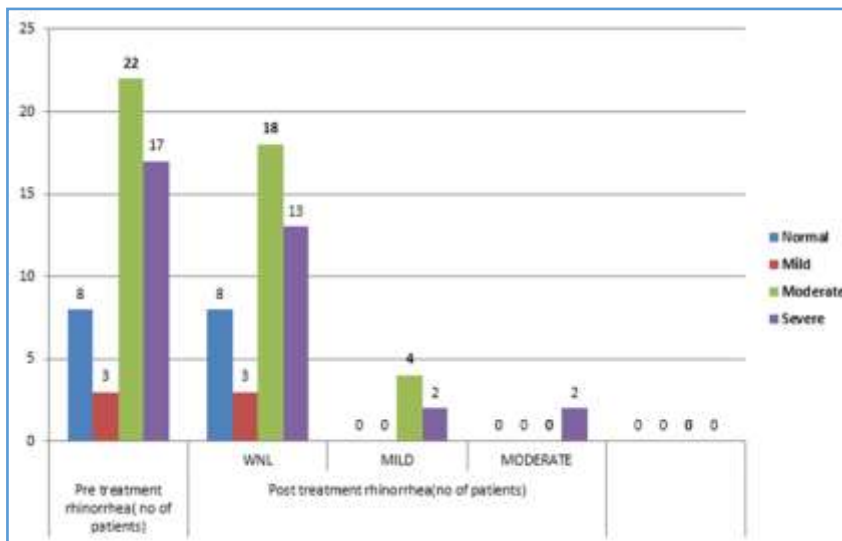
Graph 1

In our study, most common symptom observed was nasal obstruction 46 patients (92%) followed by rhinorrhoea 42 patients (84%), Sneezing 42 patients (84%).¹¹ in the present study, 46 patients (92%) reported to have nasal obstruction before therapy only 6 patients reported to have recurrence or no benefit from therapy. On applying statistical test to the above data, p<0.05 was found which is significant.



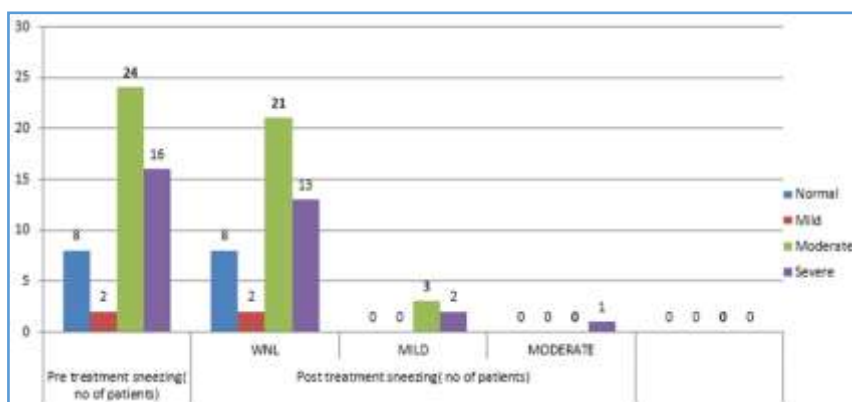
Graph 2

In the present study, 42 (84%) patients reported to have rhinorrhoea before therapy. After therapy, only 4 reported to have recurrence of symptoms. On applying statistical test, to the above data, P<0.05 was found which is significant.



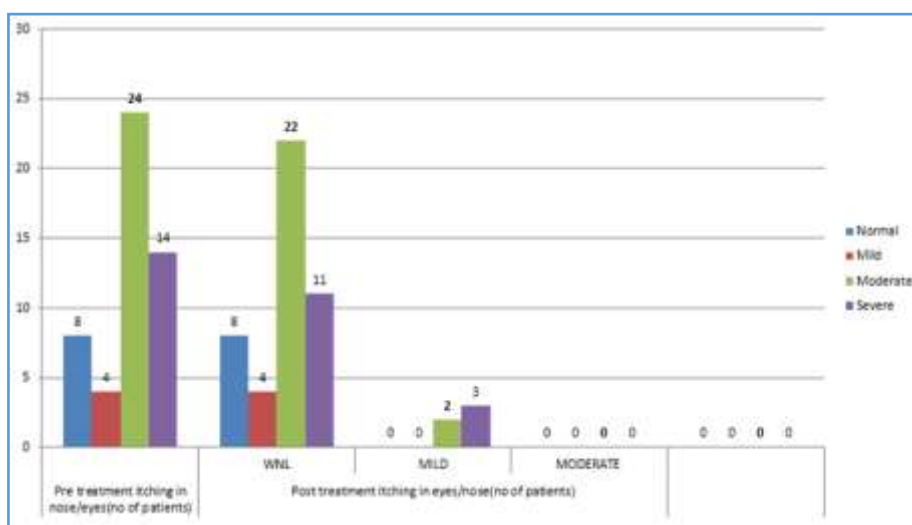
Graph 3

In the present study, 42(84%) patients reported to have sneezing before therapy. After therapy, Majority were relieved only 3 reported to have recurrence of symptoms. On applying statistical test, to the above data, $P < 0.05$ was found which is significant.



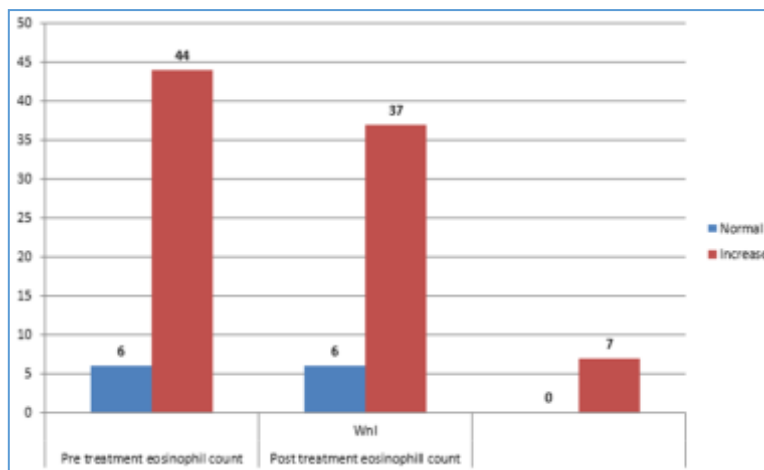
Graph 4

In the present study, 42(84%) patients reported to have itching in nose and eyes before start of therapy. After therapy, only 3 reported to have recurrence. On applying statistical test, to the above data, $P < 0.05$ was found which is significant.



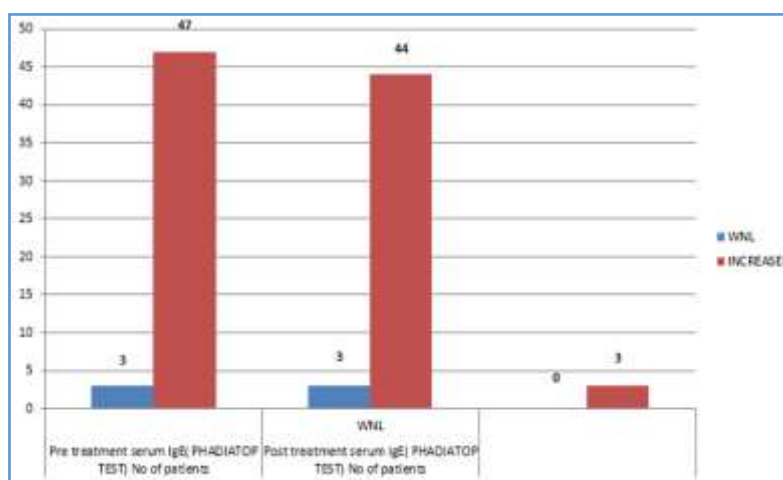
Graph 5

In the present study, 44(88%) patients reported to have an increase in the eosinophil count, above the normal range after therapy, only 7 reported to have increased eosinophil count. On applying statistical test, to the above data, $P < 0.001$ with 95% confidence interval was found which is significant.²⁵



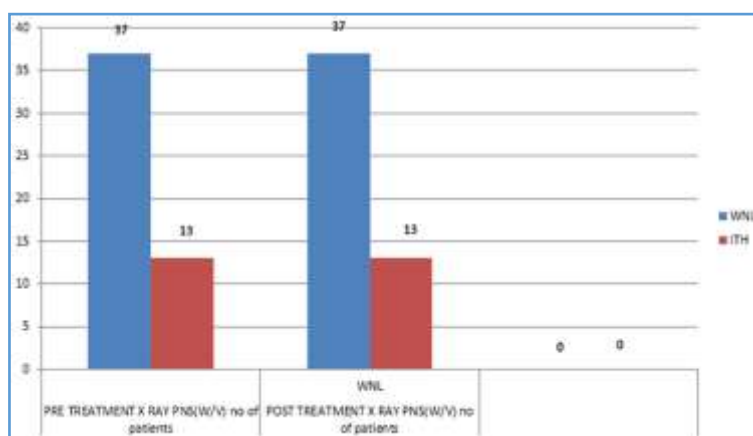
Graph 6

In the present study, 47 (94%) patients reported to have an increase in serum IgE values, after therapy, only 3 reported to have recurrence or no effect on serum IgE values. On applying statistical test to the above data, with 95% confidence interval, $P < 0.05$ was found which is significant.⁷⁻¹⁹



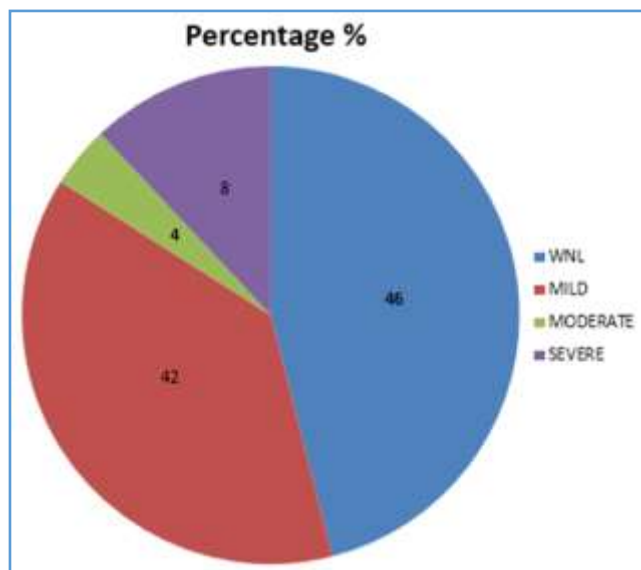
Graph 7

In the present study, 13 patients reported to have hypertrophic changes in radiological investigations like X rays PNS. After therapy, majority of patients were relieved with no significant changes in radiological investigations. On applying statistical test to the above data, $P < 0.05$ was found which is significant.



Graph 8

In the present study, we formed two groups of patients on the basis of their severity of symptoms after completion of therapy, Group A included 44 patients who improved significantly and responded well to therapy while Group B included 6 patients who did not showed improvement after therapy. On applying statistical test $P < 0.001$, was found, which is significant.



Graph 9

In the present study, after a follow up period of 1 year only 6 patients reported to have recurrence of symptoms after histaglobulin therapy, recurrence occurred mainly because the patients did not follow the dosing schedule strictly or taken inadequate treatment. On applying statistical test to the above data, $P < 0.001$ was found which is significant.

RESULTS

Commonest age group affected from allergic rhinitis is 20-25 years. Mean age group of patients in 22years, Females are affected ore commonly than males females were 58% while males were 42%.

Female: male ration is 1.38 most common symptom was nasal obstruction (92%) followed by rhinorrhoea (84%)⁸the symptomatic improvement was seen in majority of cases with statistically significant results.²⁰ Quality of life of patients suffering from allergic rhinitis improved significantly after therapy.²³ There is significant improvement in radiological investigations like X-ray (PNS), after histaglobulin therapy.⁹⁻¹⁰ There is remarkable improvement in eosinophil count when pre histaglobulin treatment and post histaglobulin treatment values were compared statistically. Immunological investigations like, serum IgE estimation (PHADIATOP TEST) improved remarkably and almost came with in normal. After a follow up period of 1 year, only 6 patients reported to have recurrence. High satisfaction is seen in the patients who followed our dosing schedule of histaglobulin therapy as evident by statistical results and interaction with patients after completion of treatment regime.

DISCUSSION

The present study was conducted in 50 patients who presented to the ENT OPD of LLR hospital Kanpur (U.P) and diagnosed as a case of allergic rhinitis for long duration not responding to conventional treatments, all cases were selected after detailed history and thorough clinical

examination, data was collected, tabulated and statistically analysed to draw results of this study.

In this study, patients were taken in age range from 16-50 years. Most of the patients were of younger age i.e 20-25 years of age. Mean age of patients was 22 years and out of all patients, 42% were male and 58% female patients. Most common age group in females was 20-25 years of age including 9 patients while in males, 5 patients were in 20-25 years of age which was the most common age group observed.

Above findings are consistent with previous study of Sathpathy et. al (2014) in which females were more affected from allergic rhinitis as compared to males.²⁰ Another study conducted by J.NARAYANA et al, included 54 subjects of which 28 were females while 26 were males affected from allergic rhinitis from long duration.¹³

In our study, most common symptom observed was nasal obstruction 46 patients (92%) followed by rhinorrhoea 42 patients (84%), sneezing 42 patients (84%). Above findings are consistent with the previous study of Sathpathy et al, 2014, in which they observed nasal obstruction was present in almost all patients followed by sneezing and rhinorrhea.²⁰

Another study, conducted by J. Narayana et al 1997, concluded that most frequent symptoms in allergic rhinitis patients were nasal obstruction and rhinorrhoea followed by sneezing and itching.¹³

In the present study, 46 patients (92%), reported to have nasal obstruction before therapy. After giving subcutaneous histaglobulin therapy, to the above patients, majority of them were relieved from symptoms only 6 patients reported to have recurrence or no benefit from therapy. Recurrence occurred due to non-compliance of patients to dosage regime of therapy.

On applying statistical test to the above data, $P = 0.753$, was found which signifies good association between histaglobulin therapy and relief from nasal obstruction. Majority of patients were relieved only 6 reported of recurrence from which we can conclude that more the severity of nasal obstruction, more are the chances of recurrence of disease.

Above findings are consistent with previous study of Sathpathy et al 2014, in which nasal obstruction was most common symptom present in patients.²⁰ Majority of patients were relieved from symptom after histaglobulin therapy. Another study by J. Narayana et al 1997, reported to have significant improvement in clinical symptoms of allergic rhinitis patients.¹³

In the present study, 42 patients (84%), reported to have rhinorrhoea before therapy. After giving subcutaneous histaglobulin therapy, to the above patients, only 4 reported to have recurrence of symptoms. Recurrence occurred due to non-compliance of patient to dosage regime. On applying statistical test, to the above data, $P = 0.755$ was found which signifies good association between histaglobulin therapy and relief from severity of rhinorrhoea. Majority patients were relieved from symptoms only 4 from severe category reported to have recurrence of symptoms from this, it can

be concluded that more the severity of symptoms, more are the chances of recurrence in long duration.

In the present study, 42 (84%) patients reported to have sneezing, before therapy. After giving subcutaneous histaglobulin therapy, to the above patients, majority were relieved only 3 reported to have recurrence of symptoms, recurrence was seen in those patients, who failed to follow the dosing schedule of the regimen. On applying statistical test, to the above data $P = 0.751$ was found and it was concluded that there is good association between histaglobulin therapy and relief from sneezing. More the severity of sneezing, more are the chances of recurrence in patients in follow up period. Above findings are consistent with the previous study of Sathpathy et al 2014 in which symptoms were relieved significantly after histaglobulin administration.²⁰

In present study, 42 (84%) patients reported to have itching in nose and eyes before start of therapy. After giving subcutaneous histaglobulin therapy, only 3 reported to have recurrence while majority of them were relieved. On applying statistical test to the above data $P = 0.799$, was found which showed good association between histaglobulin therapy and relief from severity of itching in eyes and nose. In long duration follow up only 3 patients reported of recurrence due to non-compliance to the dosage schedule of the therapy.

In the present study, 44(88%) patients, reported to have an increase in the eosinophil count, above the normal range while 6 patients were within normal limits.²⁵ After giving histaglobulin subcutaneously, only 7 patients reported to have increased eosinophil count while rest of them reported to have counts within normal range. On applying chi square statistical tests, to the above data, PEARSON = 48.14 and $P < 0.001$ with 95% confidence interval was found which shows highly significant association between histaglobulin therapy and eosinophil count. Majority patients reported to have eosinophil count within normal limits after histaglobulin therapy.

Above findings are consistent with previous study of Sathpathy et al 2014, which concluded that 72% patients have raised eosinophil count before therapy.²⁰ After therapy, significant change in eosinophil count was seen with improved quality of life in patients. Another study by J. Narayana et al 1997, concluded that clinical investigations showed no significant change after histaglobulin treatment.¹³

In our study, 47 (94%) patients reported to have an increase in serum IgE values while 3 patients were having values within normal range. After giving subcutaneous histaglobulin therapy, majority of patients reverted to normal serum IgE values only 3 patients reported to have recurrence or no effect on serum IgE values. On applying FISCHER Z statistical test to the above data, with 95% confidence interval, $Z = 1.432$ and $P < 0.05$ with relatives 0.9362 was found which showed significant correlation between histaglobulin therapy and serum IgE values. After histaglobulin therapy, majority patients responded well with serum IgE value within normal range.

Above findings are consistent with previous study of Sathpathy et al, 2014 in which they concluded that serum IgE is a good diagnostic and prognostic test in allergic rhinitis patients.²⁰ Majority patients reported to have serum IgE within normal limits. Another study conducted by J. Narayana et al 1997, concluded that clinical investigations like serum IgE showed no significant correlation with histaglobulin therapy.¹³

Another study by Yamamoto et al 1979, showed there was significant difference in the pre and post therapeutic values of eosinophil count and serum IgE values.

In the present study, 13 patients reported to have hypertrophic changes in radiological investigations like X RAY PNS while rest of them showed no significant changes. After giving subcutaneous histaglobulin therapy, majority of patients were relieved with no significant changes in radiological investigations. No recurrence was reported on applying statistical test to the above data, $P = 0.750$ was found which showed significant correlation between histaglobulin therapy and relief from hypertrophic changes in radiological investigations. Above findings are consistent with Sathpathy et al 2014, which showed 66% hypertrophic changes in X RAY PNS of allergic rhinitis patients which responded well with histaglobulin therapy.²⁰

In the present study, we formed two groups of patients on the basis of their severity of symptoms after completion of therapy, Group A included 42 patients who improved significantly and responded well to therapy in terms of their symptom severity and sino nasal outcome while Group B included 6 patients who did not showed improvement after therapy. On applying statistical test $\chi^2 = 23.12$ and $P < 0.001$, was found, which showed highly significant impact of histaglobulin therapy in treatment of patients and thus improving the quality of life in allergic rhinitis patients as it was noted that more the symptom severity the lower was the health related quality of life in allergic rhinitis patients response rate was found to be 88% after histaglobulin therapy.²³

Above findings are consistent with the previous study of Sathpathy et al 2014, in which they concluded that histaglobulin therapy is definitely beneficial for a considerable period and thus it increases the quality of life in patients.²⁰ Another study conducted by J. Narayana et al 1997, showed a response rate of 59.61% with histaglobulin alone.¹³ Yamamoto et al. 1979, has shown a response rate of 88.9% for allergic rhinitis patients while studying 52 subjects. Toshihiko et al 1971, on 64 subjects, gave a response rate of 78% with histaglobulin alone.

In the present study, after a follow up period of 1 year, only 6 patients reported to have recurrence of symptoms after histaglobulin therapy recurrence occurred mainly because the patients did not follow the dosing schedule strictly or taken inadequate treatment. On applying statistical test to the above data, $\chi^2 = 28.88$ and $P < 0.001$ was found which showed significant association between histaglobulin therapy and improvement in symptomatology of patients in long term with minimal recurrence rate.

On the basis of results of this study, subcutaneous histaglobulin therapy, in the treatment of allergic rhinitis patients from long duration not responding to conventional treatment is highly recommended with high patient satisfaction rate and least recurrence in the long term follow up period. Our study showed that Histaglobulin therapy is definitely beneficial with improvement in sinonasal outcome and quality of life of patients with no adverse effects.

CONCLUSION

Histaglobulin therapy is a safe and effective treatment for allergic rhinitis with no adverse effects. It can be easily given in OPD to patients not responding to conventional treatment modalities. It gives promising results for long duration and improves the quality of life. Results are considerably good and encouraging; however we suggest a wider based study so that the results of present study can be further substantiated statistically.

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