IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 9 Ver. I (Sep. 2017), PP 82-85
www.iosrjournals.org

Immunotherapy - Role in Severe Persistent Allergic Rhinitis. Experience in Tertiary Care Institution

Dr. S. Shenbagavalli (M.S. ENT) [1],*Dr. R. Thalapathy Ramkumar (M.S. ENT, DNB) [2],Dr. Shanmuga Ashok (M.S. ENT) [3]

[1](Assistant Professor, Upgraded institute of Otorhinolaryngology, Madras Medical College, The Tamilnadu Dr. MGR Uiversity, India)

[2](Associate Professor, Department of ENT, Thiruvanamalai Medical College, The Tamilnadu Dr. MGR University, India)

[3](Associate Professor, Department of ENT, Thiruvarur Medical College, The Tamilnadu Dr. MGR University, India)

*Corresponding Author: *Dr.R. Thalapathy Ramkumar (M.S. ENT)*

Abstract: *Allergic rhinitis affects at least 30% of individuals at some point in their life. Despite various pharmacotherapy options available for allergic rhinitis only immunotherapy has been found to modify the course in allergic rhinitis.*

Keywords*: Immunotherapy, Serum IgE, Severe persistent allergic rhinitis, Visual analogue scale.*

Date of Submission: 25 -08-2017 Date of acceptance: 09-09-2017

I. Introduction

Incidence of allergic diseases is steadily increasing and upto one third of the population is affected by it. Among the various factors global warming environmental pollutants household pollutants and diesel exhaust may be attributed to increase in allergic diseases. Among them allergic rhinitis is the one disease that is caused by Type 1 hypersensitivity. Though allergic rhinitis is nonlethal it severely affects the quality of life and causes loss of man-hours in work. If allergic rhinitis is treated suboptimal patients may progress to asthma. According to ARIA guidelines allergic rhinitis is classified as intermittent allergic rhinitis and persistent allergic rhinitis. Intermittent allergic rhinitis patients will have symptoms only during a specific time of the year. In persistent allergic rhinitis symptoms last throughout the year. In both the types of allergic rhinitis patients develop Type1 hypersensitivity, which is IgE mediated in which IgE antibodies bind to Fc receptors on mast cells. Individuals get sensitised to aero allergens and Th2 lymphocytes and IL4 play a significant role in IgE synthesis.

II. Materials And Methods

30 patients who did not respond to conventional treatment of antihistamines and nasal corticosteroids were studied during the period of 2011 to 2014 in the Department of Otorhinolaryngology, MMC, Chennai. Follow-up was done till 2016. Pregnant women, children below 12, those who developed status asthmaticus in the past, patients on beta blockers were excluded. Patients with symptoms of sneeze, watery rhinorrhoea, nasal block, itching in nose, post nasal drip and cough (other causes excluded) were selected. In these patients those who had symptoms for more than three months and whose symptoms were present for at least four days in a week were short listed and were categorised as persistent allergic rhinitis. In the short listed individuals only those of them who did not respond to antihistamines (chlorpheniramine maleate 4mg twice a day) and two months course of intranasal corticosteroids (fluticasone propionate) were chosen for the study. Informed written consent from the patients who were willing for the study and institutional ethical committee approval was obtained.

Visual analogue score and in vivo intradermal skin test, invitro testing of absolute eosinophil count, Total serum IgE level was done before the subjects were administered immunotherapy. Intradermal Skin prick test: Diluted liquid allergen was injected in the volar aspect of forearm using a mantoux syringe.4mm intracutaneous wheal was created. The wheal is measured after 20 minutes. An increase in size of atleast 3mm was considered positive. Positive control with histamine and negative control with purified human albumin was used. In vitro testing absolute eosinophil count (level above 440cells/cu mm was considered as abnormal) and total serum IgE level (level upto 150 ku/l is normal. Immunotherapy was done for aero allergens only. The following six inhalant allergens were tested in vivo house dust mite, cotton dust, aspergillus, pollen, parthenium and cockroach.

Immunotherapy was administered via subcutaneous route. Joint Test Parameter proposed VAS was used to assess sneezing, watery rhinorrhoea, and nasal block itching and post nasal drip.

Algorithm For Immunotherapy

Identification of specific allergenic extracts
Starting dose- 1000 to 10,000 fold less than maintenance dose
Build up schedule- gradually increasing doses from 8 to 28 weeks every 1- 3 times a week
↓
Maintenance dose- 500 to 2000 allergy units/ 5 to 20 microgram every 2-4 weeks
↓
Patient should wait 30 minutes after injection (to manage any complications of immunotherapy)
↓
Follow up every 6- 12 weeks
Clinical response to immunotherapy based on symptoms and medication use
↓
Usual duration-3 to 5 years
Based on severity of disease, convenience of treatment, benefits sustained from treatment- decide to continue or stop immunotherapy

Build up phase- allergen extract is slowly increased from 0.05 ml to 0.5 ml of 1 in 1,00,000 dilution on weekly twice interval. Maintenance phase- 0.5 ml of 1 in 50 dilution of allergen is given at monthly twice interval. After one year of treatment, symptom severity is assessed. Absolute eosinophil count and IgE are measured. Skin tests are done for six inhalant allergens.

Frequency Tables

Sex	Frequency	Percent
Male	15	50.0
Female	15	50.0
Total	30	100.0

Descriptive Statistics For Nasal Symptoms Before And After Immunotherapy

Statistic	N	Mean	Std. Deviation	1st Quartile	Median	3rd Quartile
SNEEZE	30	6.67	1.184	7	7	7
RUNNING NOSE	30	6.6	0.968	7	7	7
OBSTRUCTION	30	2.47	2.03	1	1	5
ITCHING	30	4.8	2.369	3	5	7
POST NASAL DRIP	30	2.6	2.486	1	1	5
SNEEZE – AT	30	1.8	1.349	1	1	3
RUNNING NOSE – AT	30	1.73	1.337	1	1	3
OBSTRUCTION – AT	29	1.34	1.203	1	1	1
ITCHING – AT	30	1.93	1.552	1	1	3
POST NASAL DRIP – AT	29	1.21	0.62	1	1	1

Wilcoxon Signed Ranks Test to compare the Before and After intervention for nasal symptoms

Variable	Ranks	N	Mean Rank	P-Value
SNEEZE - AT – SNEEZE	Negative Ranks	28	14.50	<0.001
	Positive Ranks	0	.00	
RUNNING NOSE - AT - RUNNING NOSE	Negative Ranks	29	15.00	<0.001
	Positive Ranks	0	.00	
OBSTRUCTION - AT – OBSTRUCTION	Negative Ranks	10	5.50	0.004
	Positive Ranks	0	.00	
ITCHING - AT – ITCHING	Negative Ranks	23	12.00	<0.001
	Positive Ranks	0	.00	
POST NASAL DRIP - AT - POST NASAL DRIP	Negative Ranks	10	5.50	0.004
	Positive Ranks	0	.00	

Reduction of all nasal symptoms –sneeze, running nose, nasal obstruction, itching, post nasal drip were statistically significant as seen in the above table

Wilcoxon Signed Ranks Test to compare the Mean Nasal Symptoms Before and After intervention

Variable	Ranks	N	Mean Rank	P-Value
NASAL SYMPTOMS (MEAN) – AT – NASAL SYMPTOMS (MEAN)	Negative Ranks	29	15.00	<0.001
	Positive Ranks	0	.00	

Reduction of nasal symptom mean score was statistically significant after immunotherapy as seen in the above tables

Wilcoxon Signed Ranks Test- Aeroallergens

Variable	Ranks	N	Mean Rank	P-Value
HOUSE DUST - AT - HOUSE DUST	Negative Ranks	23	13.35	0.001
	Positive Ranks	3	14.67	
COTTON - AT – COTTON	Negative Ranks	25	13.00	<0.001
	Positive Ranks	0	.00	
ASPER - AT - ASPER	Negative Ranks	14	8.21	0.001
	Positive Ranks	1	5.00	
POLLEN - AT - POLLEN	Negative Ranks	16	8.50	<0.001
	Positive Ranks	0	.00	
COCKROACH - AT – COCKROACH	Negative Ranks	16	10.06	0.001
	Positive Ranks	2	5.00	
PARTHENIUM - AT – PARTHENIUM	Negative Ranks	25	14.40	<0.001
	Positive Ranks	2	9.00	

Reduction in skin sensitivity for all allergen was statistically significant. However response to house dust, cotton dust and aspergillus were better than that to pollen. Cockroach, mould and HDM contain digestive enzymes. As there is no proteolytic activityin pollens,it should not be mixed with cockroach or moulds. But in some patients with multiple allergy to pollen and cockroach, the two were administered simultaneously which resulted in reduced effectivity of pollen.

Wilcoxon Signed Ranks Test- Quality of life

Variable	**Ranks**	**N**	**Mean**	**P value**
Quality of life-AT-quality of life	Negative ranks	**0**	**.00**	**<0.001**
	Positive ranks	**30**	**15.50**	

Improvement in Quality of life was statistically significant.

Wilcoxon Signed Ranks Test – AEC and IGE

Variable	Ranks	N	Mean Rank	P-Value
AEC - AT – AEC	Negative Ranks	30	15.50	<0.001
	Positive Ranks	0	.00	
IGE - AT – IGE	Negative Ranks	29	15.45	<0.001
	Positive Ranks	1	17.00	
	Positive Ranks	7	4.00	

Reduction of absolute eosinophil count and IG E were statistically significant as seen in the above table Absolute eosinophil count was above 200 in 8 patients before immunotherapy and it reduced to below 200 in all these patients following immunotherapy. In 15 patients the IgE count was more than 200 in 15 patients. After immunotherapy, only 2 patients had a value more than 200.

SIDE EFFECTS

s/e – AT	Frequency	Percent
None	28	93.3
LOCAL REACTION	2	6.7
Total	30	100.0

Only 6.7percent of study group had side effects –Local reaction at the site of injection No patients had severe systemic reaction

III. Conclusion

Severe persistent allergic rhinitis which is resistant to conventional treatment responds well to subcutaneous immunotherapy. The disease course was modified after immunotherapy as the absolute eosinophil count values and serum total IgE values are reduced, quality of life is improved tremendously. Simultaneous administration of common aero allergens in adequate dosage and duration is most effective in reducing the symptoms and dosage needed for severe persistent allergic rhinitis.

Reference

[1]. Scott –brown"s otolaryngology 7th edition
[2]. Immunology 5th edition Riot, Brostoff
[3]. The otolaryngology clinics of north America 2008 –T he unified airway
[4]. Allergic rhinitis and its impact on asthma [ARIA] -2008 update[in collaboration with the world health organization]
[5]. Task force report –Allergen immunotherapy :A practice parameter third update-JOURNAL OF ALLERGY CLINIC IMMUNOLOGY -Jan 2011
[6]. The joint task force on practice parameters –symptom severity assessment of allergic rhinitis-2003 rhinitis
[7]. Pajno GB ,Barbrio G ,Deluca,et al :prevention of new sensitizations in asthmatic children monosensitized to house dust mite by specific immunotherapy .ClinExp Allergy2001;31[9]:1392-1397
[8]. A.O.Eifan et al –Clinical efficacy and immunological mechanisms of sublingual andsubcutaneous immunotherapy in asthmatics/rhinitis sensitized to house dust mite –Clinical& experimental allergy 2010;40,922-932.
[9]. VisnjaMilavec-Puretic et al-Retrospective study of Specific Immunotherapy .Actadermatovenerol Croat 2007;15[4]:221-227
[10]. S V Joshi ,D M Tripathi-Allergen specific immunotherapy in naso bronchial allergy –Indian Journal Of Medical sciences-2003;57;527-533

*Dr. S. Shenbagavalli (M.S. ENT). "Immunotherapy - Role in Severe Persistent Allergic Rhinitis. Experience in Tertiary Care Institution." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.9 (2017): 82-85