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FOOD ALLERGEN SENSITIVITY IN ALLERGIC RHINITIS WITH VITAMIN-D A MODULATOR IN ORAL ENZYMES CHANGES IN NASAL OBSTRUCTIVE PATIENTS

Desu Muralikrishna, Dr. A.Rama Rao, Dr.Suman Krishna Reddy, Bokkisam Suneel

Assistant Professor, Department of ENT, Narayana Medical College and Hospital, Nellore
Email id: ramaraoa@gmail.com
Phone: 9440403466
Assistant Professor, Department of ENT, Narayana Medical college and Hospital, Nellore
Email id: sumankrishnareddy@yahoo.co.in
Phone:9948093437
Ph.D scholar, Department of Biochemistry, Index Medical College,Hospital and Research Centre , Indore.
Email Id; bokkisamsuneel@gmail.com
Phone: 9553555144

Corresponding Author:Desu Muralikrishna, Associate Professor, Department of ENT, Hi Tech Medical College & Hospital, Rourkela, Odisha
Email id: desumuralikrishna@gmail.com
Phone: 9700416962

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Abstract :
This study was a common evaluatory diagnostic issue, but it was a rare application of the included multiple assessments of the patients by the regular practice of the ENT department. This study's intention is rapid curing of the food allergic rhinitis. Food-allergic rhinitis is a common concern among clinicians, Nasal drops and sprays several patients come back with complaints of no relief. This study focuses on etiology and finds some more parameters for curing and suffering rhinitis inflammation by the analysis of different parameters for the treatment regimen by the estimation of serum vitamin D levels in allergic conditions because vitamin D also acts as an anti-inflammation factor. Regulates the immune response act and at the same time oral enzymes are also altered during food allergic conditions the enzyme activities are raised during observation of this study and complementary inhibitor applications are important evaluation for clinical practices.

Keywords : Food Allergen, Vitamin D, Compliment hyper sensitivity

Aim:

This study was a common evaluatory diagnostic issue, but it was a rare application of the included multiple assessments of the patients by the regular practice of the ENT department. This study's intention is rapid curing of the food allergic rhinitis. Food-allergic rhinitis is a common concern among clinicians, Nasal drops and sprays several patients come back with complaints of no relief. This study focuses on etiology and finds some more parameters for curing and suffering rhinitis inflammation by the analysis of different parameters for the treatment regimen by the estimation of serum vitamin D levels in allergic conditions because vitamin D also acts as an anti-inflammation factor. Regulates the immune response act and at the same time oral enzymes are also altered during food allergic conditions the enzyme activities are raised during observation of this study and complementary inhibitor applications are important evaluation for clinical practices.

Introduction:

Food allergen sensitivity is an adverse immune reaction to specific foods in adults and children which can cause a range of symptoms from mild to severe discomfort some sometimes commonly observed to life-threatening reactions.[1,2,3] In this conditions hypersensitivity (Anaphylaxis) reactions.[4,5] The immune system triggers the elevation of IgE

(Immediate reaction) non-IgE (delayed reactions), and non-immune-mediated factors that influence the neutralization of the antigen immune complex in the current scenario vitamin D is not only Ca+ metabolism, Ca+ is also important for regulating the complement system.[6,7,8] Vitamin D and Calcium association regulates and suppresses inflammation and triggers the interferon cytokines leading to hydrolysis for the anti-inflammatory factor in regular observation in modern life.[9,10,11] The circumstances of the human culture lifestyle completely changed because of less exposure to light the study monitors vitamin D deficiency low calcium levels to IGE levels are elevated vitamin D supplement is necessary.

When exposed to or affected by the allergy due to lack of vitamin D and calcium impaired immune complex mechanism leads to nasal obstruction is the primary incidence happen the patient ENT nasal obstruction mucosal swelling, crushing facial muscle pain, and nasal discharge. The inflammation saturation is nasal through oral discomfort and loss of taste. Impaired the production of Gustine protein-associated enzymes this study raises the information anti-inflammatory enzymes and peptides such as trypsin, proteases, bradykinin, and lipolytic enzymes activity is inhibited by inflammatory factors of IL-12, CCL2, PGE2, LTB4, ICAM-1.[12,13,14] The plan of the study indicates the stereo care of patients from Food allergy by the diagnosis by physical and estimated parameters are helpful for treatment and rapid cure and avoid the saturation of inflammation.

Materials and Methods

Study Subjects

This Prospective Observational single-center study was conducted in the Department of ENT in the teaching institute of Rerukela Institute of Medical Sciences and Research. A total of 194 male and 87 female allergic rhinitis patients were included in our study from May 2019 to August 2022. Patients with any two symptoms suggestive of allergic rhinitis (sneezing, itching in nose, nasal discharge, nasal block) & elevated IgE levels (>120 IU/ml) were included in our study.[15,16,17] Once the patient satisfied the inclusion criteria no further grading of severity was done. The subjects were selected by a range of IgE level bases.

Inclusion Criteria

- Allergic rhinitis patients with IgE>120 IU/ml.
- Age more than 20 years.
- Patients who consented to the study.

- Patients who have not received antihistamines, beta-blockers, or steroids for at least the last 3 days.
- Continuous nasal discharge, no inhalers

Exclusion Criteria

- Age less than >20 years.
- Skin diseases like severe eczema or dermatographism.
- Pregnant and lactating mothers

The approval of the local ethics committee was taken. Exclusion criteria were pregnant or nursing mothers, hemophilia, severe liver damage, and those on blood thinning drugs like aspirin, warfarin, acute infection, or allergy.

The patients were randomized alternatively into the study group and control group. patients taken in the study group were given one commercially available combination of enzymes containing bromelain, and trypsin three times a day, 30 min before or 2 hours after meals.

observational case-control study conducted who were clinically diagnosed with allergic rhinitis on the basis of (1) ARIA classification, (2) positive nasal allergic mucin (slide method) and (3) total eosinophilic count (TEC) ([400 HPF) were included in the study as case population TNSS (Total nasal symptom score) and total eosinophilic counts (TEC) at 0, 1 and 3 months and data were compared among two groups. A value of p \0.05 is considered statistically significant. Vitamin D deficiency is defined as 25(OH)D3 levels \15 ng/ml, vitamin D insufficiency if level between 15 and 30 ng/ml. Patients with serum vitamin D levels of 30–50 ng/ml are considered normal and excluded from the study.[18] The Total Nasal Symptom Score (TNSS) is the sum of scores for each of nasal congestion, sneezing, nasal itching, and rhinorrhoea at each time point, using a four-point scale (0–3) followed step by step. TNSS is calculated by adding the score for each of the symptoms to a total out of 12. SPSS, version 21 for Windows statistical software was used for statistical analysis.[19,20]

In the study of enzyme activity by the collection of 15 ml of saliva with the affected patients the enzymes are diagnosed by individual kit and auto analyser methods. Vitamin D can estimated by the HPLC column chromatography method.[21]

Results

Age distribution of allergic rhinitis patients with 194 males and 57 females
The table 1 shows age-related patient division

Age Group	Total no of Patients
18-21	35
22-31	85
32-41	58
42-51	49
52-61	10
62-71	9
72-81	5

Table 2 shows the Pattern and degrees of positive response of food allergens and vitamin D levels in body

Allergen Category	S.No	Allergen Name	Wheal Positivity			Total positive Patients	% Positive patients (Total 194 Male+57 Female subjects)	Vitamin D levels
			3 mm	4 mm	5 mm			
Non Veg	1	Egg white	38	14	5	57	26.15%	19.3
	2	Chicken	27	16	4	47	21.56%	19.8
	3	Mutton	23	11	3	37	16.97%	19
	4	Sardine	21	10	3	34	15.60%	19.9
	5	Beef	21	10	4	35	16.06%	20.1
	6	Prawn	18	11	4	33	15.14%	19.5
	7	Egg Yolk	17	11	2	30	13.76%	18.7
Spices	8	Chilli powder	34	21	7	62	28.44%	18.9
	9	Methi seeds	32	22	6	60	27.52%	19.2
	10	Mustard	31	21	5	57	26.15%	19.8
	11	Black pepper	38	16	5	59	27.06%	20.1
	12	Cumin seeds	36	12	4	52	23.85%	21.2
	13	Saunf	31	14	7	52	23.85%	22
	14	Sesame seed	32	11	6	49	22.48%	19.7
	15	Cinnamon	26	15	3	44	20.18%	18.5
	16	Ind	25	10	5	40	18.35%	21.7
	17	Lemon Grass	23	12	4	39	17.89%	25.4
	18	Cardamom	26	8	3	37	16.97%	22.1
	19	Saffron	24	9	2	35	16.06%	19.7
	20	Sonth	26	6	3	35	16.06%	18.8
	21	Turmeric	23	7	3	33	15.14%	19.5
	22	Clove	21	7	4	32	14.68%	21.2
	23	Beetel nut	42	18	5	65	29.82%	20.4
Dry fruits	24	Dates	34	15	7	56	25.69%	21.6
	25	Anjeer	31	16	6	53	24.31%	20.5
	26	Peanut	35	12	3	50	22.94%	19.8
	27	Walnut	31	10	5	46	21.10%	19.4
	28	Almond	30	9	5	44	20.18%	21.6
	29	Pista	20	17	4	41	18.81%	22.1
	30	Cashewnut	30	6	2	38	17.43%	22.4
	31	Hazelnut	9	6	3	18	8.26%	21.8
Beverages	32	Tea	39	20	3	62	28.44%	20.3
	33	Coffee	36	19	5	60	27.52%	19.9
	34	Cocoa	36	15	4	55	25.23%	19.7
	35	Chocolate	26	8	2	36	16.51%	20.4
Vegetables	36	Spinach	49	11	3	63	28.90%	22.5
	37	Coriander	38	9	5	52	23.85%	22.1
	38	Mushroom	34	13	4	51	23.39%	21
	39	Cauliflower	35	7	5	47	21.56%	19.8
	40	Sweet potato	31	8	5	44	20.18%	17.2
	41	Ginger	36	7	2	45	20.64%	21
	42	Curry leave	30	10	4	44	20.18%	18.7
	43	Coconut	34	8	2	44	20.18%	19.4
	44	Bean	27	13	5	45	20.64%	19.8
	45	Cucumber	32	6	4	42	19.27%	19.9
	46	Lettuce	29	9	4	42	19.27%	21.2

	47	Capsicum	27	12	3	42	19.27%	22.4
	48	Pea	28	9	3	40	18.35%	22.1
	49	Brinjal	29	11	0	40	18.35%	22.3
	50	Cabbage	24	11	2	37	16.97%	22.7
	51	Potato	29	8	0	37	16.97%	23
	52	Garlic	23	10	4	37	16.97%	22.4
	53	Onion	29	7	1	37	16.97%	23.5
	54	Tamarind	19	15	1	35	16.06%	24.1
	55	Mint	23	9	3	35	16.06%	22.1
	56	Tomato	25	9	0	34	15.60%	25.1
	57	Pumpkin	24	7	2	33	15.14%	20.7
	58	Bitter gourd	26	5	2	33	15.14%	21.8
	59	Lady finger	19	10	2	31	14.22%	22.9
	60	Carrot	22	8	0	30	13.76%	21.7
	61	Celery	19	5	6	30	13.76%	23.5
	62	Sweet Gourd	23	6	1	30	13.76%	32.7
	63	Gowar	16	7	5	28	12.84%	18.5
	64	Raddish	14	9	3	26	11.93%	19.4
	65	Red pumpkin	11	6	9	26	11.93%	21.5
	66	Ghilaki	19	3	3	25	11.47%	22.1
	67	Tendi	9	8	7	24	11.01%	15.8
	68	Turai	10	8	3	21	9.63%	16.7
	69	Snake gourd	12	7	2	21	9.63%	19.5
	70	Papadi	9	7	4	20	9.17%	22.4
	71	water chestnut	8	5	5	18	8.26%	21.8
	72	Ghevada	11	3	3	17	7.80%	19.7
	73	Drumstick	9	5	3	17	7.80%	21.4
	74	Gum acasia	10	4	1	15	6.88%	20.9
	75	Parwal	8	4	3	15	6.88%	22.5
Milk & Milk products	76	Butter	25	6	1	32	14.68%	26.4
	77	Cheese	20	12	0	32	14.68%	22.8
	78	Curd	20	3	1	24	11.01%	21
	79	Paneer	18	4	0	22	10.09%	19.5
	80	Milk	15	4	0	19	8.72%	17.8
Fruits	81	Sugarcane	31	14	3	48	22.02%	18.2
	82	Chikoo	35	6	3	44	20.18%	17.9
	83	Lemon	36	7	1	44	20.18%	18.5
	84	Pomegranate	32	8	1	41	18.81%	19.4
	85	Strawberry	24	13	4	41	18.81%	16.4
	86	Musk melon	30	8	2	40	18.35%	17.8
	87	Mango	33	2	2	37	16.97%	16.9
	88	Guava	23	8	6	37	16.97%	22.1
	89	Pear	31	6	0	37	16.97%	19.1
	90	Banana	28	6	1	35	16.06%	18.1
	91	Watermelon	28	7	0	35	16.06%	18.5
	92	Apple	24	7	1	32	14.68%	19.2
	93	Orange	26	4	2	32	14.68%	17.8
	94	Pineapple	20	9	1	30	13.76%	16.5
	95	Papaya	22	3	2	27	12.39%	16.9
	96	Plum	20	4	3	27	12.39%	18.4
	97	Grape	17	4	2	23	10.55%	19.2
	98	Jackfruit	13	6	3	22	10.09%	18.22
	99	Rose apple	9	8	2	19	8.72%	18.5
	100	Custard apple	12	4	2	18	8.26%	17.41
	101	Cherry	14	1	1	16	7.34%	16.4
	102	Peach	10	2	2	14	6.42%	15.9

	103	Black plum	9	3	3	15	6.88%	16.8
Pulses & Cereals	104	Soyabean	33	10	8	51	23.39%	19.1
	105	Moong dal	33	12	6	51	23.39%	21.4
	106	Rajma	21	12	8	41	18.81%	22.9
	107	Dal arhar	30	9	2	41	18.81%	37.1
	108	Urad dal	24	9	6	39	17.89%	32.5
	109	Masoor dal	22	14	3	39	17.89%	30.1
	110	Gram kabuli	25	5	4	34	15.60%	19.1
	111	Bengal gram	18	10	3	31	14.22%	22.5
	112	Maize	30	11	5	46	21.10%	20.9
	113	Wheat	29	12	4	45	20.64%	32.9
	114	Jowar	22	11	6	39	17.89%	22.9
	115	Bajra	28	8	2	38	17.43%	25.4
	116	Rice	28	6	2	36	16.51%	22.9
	117	Barley	27	6	2	35	16.06%	30.4
	118	sabudana	22	6	2	30	13.76%	25.8

Table3 shows Vitamin D levels selected subjects

Age Group	Total no of Patients	Vitamin D (Range: 30-50 ng/ml) Mean value
18-21	35	17.3±
22-31	85	15.1 ±
32-41	58	13.6 ±
42-51	49	12.9±
52-61	10	9.8 ±
62-71	9	9.1 ±
72-81	5	7.6 ±

Table 4 shows food allergic rhinitis- Treatment with vitamin D and anti-inflammatory agents (Non-steroid drugs) and the results after the treatment of vitamin D observation of oral enzyme activity of nasal blockage and nasal discharge.

Group	1ST WEEK			2ND WEEK			4TH WEEK		
	Enzyme activity	Nasal Blockage	Examine by nasal speculum	Enzyme activity	Nasal Blockage	Nasal Discharge	Enzyme activity	Nasal Blockage	Nasal Discharge
Glycoprotein kinases	95	Study by nasal Antirior Rhinoscopy	Examine by Nasal speculum	81			42		
Tripsine	82			72			9		
Elastinases	91			76			13		
Proteins	83			61			28		
MMPs	74			70			40		
Bromelain	29			53			70		
Lipase	32			61			73		
Amylase	31			58			88		
Gustin	37	High	High	60	Moderate	Moderate	80	Nil	Nil

PAge distribution of allergic rhinitis patients with 194 males and 57 females

Table 1 shows age-related patient division, Table 2 shows the Pattern and degrees of positive response of food allergens and vitamin D levels in the body, Table 3 shows

Vitamin D levels in selected subjects in the age group of 18-21 vitamin D levels shows as insufficiency 17.3± compared to normal value. Due to food allergen subjects were selected 35. the age group of 22-31 vitamin D levels show insufficiency of 15.1± compared to the normal value. Due to food allergen subjects were selected 85. the age group of 32-41 vitamin D levels show insufficiency of 13.6± compared to the normal value. Due to food allergen subjects were selected 58. the age group of 42-51 vitamin D levels show an insufficiency of 12.9± compared to the normal value. Due to food allergen subjects were selected 49. the age group of 52-61 vitamin D levels show insufficiency 9.8 ± compared to the normal value. Due to food allergen subjects were selected 10. the age group of 62-71 vitamin D levels show insufficiency 9.1 ± compared to the normal value. Due to food allergen subjects were selected 9. age group of 72-81 vitamin D levels show as insufficiency 7.6 ± compared to the normal value. Due to food allergen subjects were selected 5.

Mentioned food allergens are noted and given by table Non Veg, Spices, Dry fruits, Beverages, Vegetables, Milk & Milk products, Fruits, Pulses & Cereals,

Table 4 shows that during food allergic conditions the oral proteolytic enzyme is also elevated and healthy diagnosis enzyme activity is suppressed noted in this study

Discussion

The pattern of food allergens is that food allergies are not a lifestyle choice they are a life-threatening condition the study indicates that food allergy is not a limitation it's a reminder to be mindful of patient health, food allergy has made more aware of attention to health.[22] a wrong diet can lead to a wrong life. In conclusion this study for food allergens made more high hypersensitivity reactions observed by the study of inflammatory markers are elevated and proteolytic enzyme activity is elevated the regular oral digestive enzymes are depressed activities during continue the recovery from food allergy during continue the recover from food allergy the hypersensitivity reaction made life-threatening.[23] These oral enzymes are harnessed from plants, fungi bacteria and animals for pharmaceutical use. The vitamin D is an important biological marker for the regulation of stimulation of anti-inflammatory factors we observed the present study was indicates the vitamin D supplement is a good choice for the rapid prevention of food allergic conditions and inhibition of oral proteolytic enzyme action the study complete observation of enzyme activity and inflammatory markers disappear in saliva anti-inflammatory factor activity by the role of vitamin D.[24]

The present study says inhibition of inflammation and hypersensitivity saturation by the activation of complement fixation association with calcium and vitamin D therapy.

Conclusion:

In summary, the study indicates the following food allergy is most prevalent in the world the food allergic rhinitis can control program is the basic study intention to make the design and execution of the selected parameters, these parameters show accuracy suspected results explained significant elevation for therapy of vitamin D.

All clinicians applied for Vitamin D for calcium metabolism but it is a powerful receptor-mediated anti-inflammatory factor and enhancer of the calcium-associated complement fixation reaction to avoid triggering the hypersensitivity reaction and regularization of text management in food allergen rhinitis.

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