Original article:

Study of clinicopathological profile in patients of Allergic Rhinitis

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ABSTRACT

Introduction : Allergic rhinitis is defined clinically by IgE mediated hypersensitivity disease of mucous membrane of nasal airways .Aims and objectives of the study was To evaluate the clinical presentation of allergic rhinitis and to evaluate the investigative profile for diagnosis of allergic rhinitis

Source of Data was Patients attending ENT OPD at a tertiary care centre

Materials and methods: 50 patients were included in the study were diagnosed clinically according to ARIA(Allergic rhinitis and its impact on asthma) guidelines. Eligible subjects were identified by screening questionnaire designed to identify those with allergic rhinitis. Subjects were asked, Does any of the following symptoms cause you trouble when you do not have a cold or the flu: sneezing/running nose/blocked nose? If any response was "yes" subjects were asked, for how many years you have had these symptoms. Subjects were then asked to state whether symptoms were seasonal or perennial. Following investigations were done in all subjects -Blood investigations,nasal eosinophilic count,endoscopic examination,serum totsal IgE levels

Conclusion: Drawn from our study was, we found the disease in younger age group, Majority of subject suffered from perennial allergic rhinitis.Nasal smear eosinophil count and serum total IgE levels can be supportive tests for rapid, noninvasive, economical tests for screening of patients of allergic rhinitis along with proper clinical history and examination

Key words: Allergic rhinitis,IgE

INTRODUCTION

Allergic rhinitis is defined clinically by IgE mediated hypersensitivity disease of mucous membrane of nasal airways characterized by combination of two or more nasal symptoms: Running of nose; blocking of nose; itching of nose; and sneezing following exposure to allergen.[1]

Allergic rhinitis is classified worldwide according to ARIA (allergic rhinitis and its impact on asthma) guidelines into.[2]

1. Mild
2. Intermittent symptoms
3. Moderate to severe one or more items
4. Persistent symptoms

In general total serum IgE and eosinophil count are high in allergic diseases.[3]

Present study is an attempt to study clinical profile in the cases of allergic rhinitis.

MATERIALS AND METHODS

Source of Data – Patients attending ENT OPD at a tertiary care centre

Method of Collection of Data

Time bound prospective design.

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Inclusion criteria:

Patient presenting with

- Sneezing
- Itching sensation in nose
- Watery discharge from nose
- Nasal obstruction .

Exclusion Criteria

- Patients with symptoms due to structural abnormalities such as grossly deviated nasal septum, nasal polyps, tumors.
- Patient requiring surgical management
- Use of any drug (That are used in study i.e. Antihistamines, oral corticosteroids, nasal corticosteroids, Nasal decongestants within last 30 days of entry visit),
- Any disease or surgery known to affect gastrointestinal absorption of drugs.

50 patients were included in the study were diagnosed clinically with typical symptoms and signs of allergic rhinitis according to ARIA(Allergic rhinitis and its impact on asthma) guidelines..

Following investigations were done in all subjects

I. Blood investigations - Complete blood count
   - Differential leukocyte count.
   - Absolute eosinophil count
   - Serum Total IgE levels

II. Nasal Smear eosinophil count

III. Endoscopic Nasal examination

IV. Radiological investigations - X-Ray PNS waters view

Nasal smear preparation - Nasal secretions collected by cotton tipped probe from anterior end of inferior turbinate. Secretions transferred to slides and stained with Hematoxyline and Eosin stains and Geimsa stains.

Blood studies – With strict aseptic precautions blood sample was collected by venepuncture and 3ml blood was collected in EDTA anticoagulant. The sample collected was subjected to investigation like Hb%, TCL, DLC Absolute eosinophil count.

Serum Total IgE – 3ml blood was collected from venepuncture under all aseptic precaution in plain bulb and serum total IgE levels measured by automated chemiluminescence method. The chemilluminometric technology uses constant amounts of two antibodies to IgE. The first antibody, (in the light reagent) is goat anti-human IgE antibody labeled with acridinium ester. The second antibody, (in the solid phase), is a mouse antihuman IgE antibody, which is covalently coupled to paramagnetic particles. The system reports serum total IgE results in IU/ml.

Endoscopic nasal examination – With the help of 0^0 and 30^0 Hopkins rigid endoscope 4.5, nasal endoscopy was done.

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OBSERVATION AND RESULTS

Study Design:

Prospective type of evaluation study, consisting of 50 patients is under taken to study Eosinophil count in nasal smear, blood smear, serum Total IgE in patients of allergic rhinitis.

AGE DISTRIBUTION

AGE IN YRS	NUMBER	PERCENTAGE
10-20	9	18%
21-30	19	38%
31-40	11	22%
41-50	7	14%
51-60	1	2%
61-70	2	4%

SEX DISTRIBUTION

SEX	NUMBER	PERCENTAGE
FEMALE	12	24%
MALE	38	76%

SYMPTOM DISTRIBUTION

Symptom	Number	Percentage
Rhinorrhoea	50	100%
Nasal obstruction	27	54%
Sneezing	50	100%
Lacrimation	36	72%
Itching of eyes	28	56%

SEASONAL OR PERRENNIAL

	NUMBER	PERCENTAGE
SEASONAL	21	42%
PERRENNIAL	29	58%

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PREDISPOSING FACTORS

FACTOR	SEEN IN
DUST	41
WEATHER	23
ANIMALS	2
FOOD	0
FAMILIAL	5

NASAL SMEAR EOSINOPHIL COUNT

	NUMBER	PERCENTAGE
<10%	29	58%
>10%	21	42%

Positive nasal eosinophilia i.e. >, 10% is seen in 42% patient < 10% in 58% patients.

PERIPHERAL SMEAR EOSINOPHIL COUNT

	NUMBER	PERCENTAGE
5 OR >5%	17	34%
<5%	33	66%

ABSOLUTE EOSINOPHIL COUNT

ABSOLUTE EOSINOPHIL COUNT	OBSERVED VALUE	%
<440	36	72%
>440	14	28%

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SERUM TOTAL IgE

SERUM TOTAL IgE	OBSERVED VALUE	%
<378 IU/ml	30	60%
>378 IU/ml	20	40%

X-RAY PARANASAL SINUSES

	NUMBER	PERCENTAGE
NORMAL	37	74%
SINUSISTIS	13	26%

DIAGNOSTIC NASAL ENDOSCOPY

Findings	Number	Percentage
Bluish mucosa	11	22%
ITH and bluish mucosa	34	68%
Pale mucosa	5	10%

DISCUSSION

Allergic rhinitis is common immunological disease experienced by humans, with appropriate history and detailed examination the diagnosis usually may not be problematic. Routine investigation may not contribute much for final diagnosis but may help in ruling out other possibilities.To confirm allergic nature of disease complicated tests like specific IgE, skin test, RAST, ELISA etc. may not be possible in many hospital set up due to high expenses associated with such investigations. Hence simple test for finding out allergy as an etiological agents by doing eosinophil count in nasal smear and peripheral blood smear and establishing it as a reliable and simple investigation has been tried.

This study tries to evaluate efficacy of nasal smear, peripheral blood smear and total IgE levels in patients of allergic rhinitis. In this study 76% patients were males and 24% were females correlated well with Rakesh Chanda et al (2002)[4] where he found 62% males and 38% females majority of age group was adolescent and adult. 78% of patients were in age group <40 years. Findings correlated with other studies like Bahram Mirsaid Ghazi et al (2003)[5] and with observations of S.P.S. Yadav, H.C. Goel, Rakesh Chanda[28] et al clinical profile of allergic rhinitis in Haryana.

Dust was the most common risk factor for allergic rhinitis accounting for 82% followed by weather changes 46% No patient was allergic to food. Two patients had pet animals at home; both of them were allergic to them. Among 50 patients, 5 had family history of allergic rhinitis and atopy accounting for 10% which is comparatively less as observations made by Bahram Mirsaid Ghazi et al (2003)[5] (47.9%), Chowdary V.S. et al (2003) [6] (50%) and Kumar[6,7] et al (52.3%).Among other risk factors like food allergy and pet animal have less

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contribution for allergic respiratory disease which is well correlated with other studies done by Pokharel PK et al (2007).[8] All the patients complained of rhinorrhoea and sneezing accounting for 100%, followed by lacrimation seen in 72% patients while nasal obstruction was seen in 54% and itching of eyes seen in 56%.

In 42% patient's, complaints were seasonal, commonly seen during spring season or early summer while 58% of patient had symptoms throughout the year, which is correlated well with results of V.S. Chawdary, E.C. Vinaykumar[6] et al, showing 56% patients with perennial symptoms and 43% patients with seasonal symptoms.

Nasal Smear Eosinophil count reference value was 10%, below which it is considered insignificant.[4] 58% patient's Nasal smear was below reference value while 42% patients Nasal smear was above reference value which is correlated well with study of Rakesh Chanda et al (2002)[4] showing 40% of patients with significant eosinophil count in allergic rhinitis patients and is much higher than that found in studies by Chowdary et al(2003)[6] showing only 8%. Patients with significant eosinophilia in nasal smear and is much lower than that observed by Mehdi Bukshee (2010)[31] et al who found 51% patient with significant eosinophil count in patient of allergic rhinitis.

There may be several explanations for the low percentage of patients showing significant eosinophilia in our study. First, many of these patients did not have symptoms at the moment they reported at our OPD. As the eosinophilia is correlated with exposure to allergens, it has been recommended that asymptomatic patients are asked to return when they experience the symptoms. Moreover, to obtain higher sensitivity, it has been advised that three smears are taken on separate occasions. Second, nasal eosinophilia is negatively influenced by bacterial and viral infections. However, we chose to evaluate this test under circumstances that were representative for daily practices, so that the test could be used as quick, economical and supportive to diagnosis under the circumstances of study.

Peripheral blood Differential eosinophil count normal value is up to 5%.66% patient showed different count of < 5%. While 34% patient showed >= 5%.X-Ray paranasal sinuses - out of 50 patients 37 patients i.e. 74% patient showed sinusitis while 26% patient showed X-Ray PNS normal which is comparable with results of Ashok Shah and Powankar(2009).[6]Diagnostic Nasal Endoscopy - showed inferior turbinate hypertrophy and bluish nasal mucosa in 68% of patients while Bluish mucosa in 22% of patient and 10% patients with pale mucosa while 28% patients showed No abnormality on diagnostic nasal endoscopy findings. Absolute Eosinophil Count - Normal values are considered < 440 cell/cmm 72% patient showed eosinophil count < 440, While 28% showed >440. Which is slightly lower as compared to studies performed by Chowdary et al (2003)[6] who showed Normal eosinophil count in >90% of patients. Possible explanation for low peripheral blood absolute eosinophil count in more patients could be given as, in allergic rhinitis eosinophils are increased in number locally i.e.in nasal mucosa, and not systemically .Thus if we would have performed nasal mucosal biopsy of each individual it would have shown abundant eosinophils however, nasal mucosal biopsy is an invasive, time consuming procedure. Serum total IgE levels normal values considered < 378 IU/ml. Values <378 were seen in 60% patients while 40% patients showed IgE levels > 378 which is very less as compared to the study performed by Chowdary et al (2003)[6] who showed 90% patients with allergic rhinitis showing raised serum Total IgE levels.

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CONCLUSION:

Nasal smear eosinophil count and serum total IgE levels can be supportive tests for rapid, noninvasive, economical tests for screening of patients of allergic rhinitis along with proper clinical history and examination .

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