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ORIGINAL RESEARCH

Evaluation of absolute eosinophil count in allergic rhinitis patients

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ABSTRACT

Aim: The present study was evaluated for assessing absolute eosinophil count in allergic rhinitis Patients.

Materials & Methods: A total of 140 patients with allergic rhinitis were enrolled. The study was conducted from January 2019 to august 2019 at Government medical College, Datia, Madhya Pradesh. Detailed evaluation of the patients was done on the basis of history, clinical examination and diagnostic nasal endoscopy. Careful examination of the patients was donefor evaluating ear, nose, throat and Respiratory system. Blood samples were obtained from all the patients and absolute eosinophil count was assessed. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

Results: Mean age of the patients was 38.4 years. 83 patients belonged to the age group of 21 to 40 years. While classifying patients on the basis of eosinophil count, it was seen that in 64.29 percent of the patients (90 patients), absolute eosinophil count was more than 440 cells/cu mm while in the remaining 35.71 percent of the patients, it was less than 440 cells/cu mm. Mean absolute count was 482.3 cells /cu mm. Mean absolute eosinophil count among patients with only nasal symptoms, nasal + ocular symptoms and among patients with nasal + respiratory symptoms was 339.5 cells/cu mm, 302.4 cells/cu mm and 493.2 cells/cu mm respectively.

Conclusion: From the above results, the authors concluded that absolute eosinophil counts are done in all cases of rhinitis as it is cost effective and easily accessible.

Key words: Absolute eosinophil count, Allergic rhinitis

INTRODUCTION

Allergic Rhinitis is a symptomatic disorder of the nose induced after allergen exposure due to an IgE-mediated inflammation of membranes lining the nose. It is clinically defined as a symptomatic condition with four major symptoms as anterior or posterior rhinorrhoea, sneezing, nasal itching & nasal congestion.[1-3] Allergic rhinitis is the most common type of chronic rhinitis, affecting 10–20% of the population, and evidence suggests that the prevalence of the disorder is increasing. Severe allergic rhinitis has been associated with significant impairments in quality of life, sleep and work performance.[4,5] Evidence has shown that allergen provocation of the upper airways not only leads to a local inflammatory response, but may also lead to inflammatory processes in the lower airways, and this is supported by the fact that rhinitis and asthma frequently coexist.[6,7] It has been well established that eosinophils play an important role in chronic allergic diseases. The number of eosinophils in nasal smear was shown to be highly correlated with the nasal airflow resistance

and the spirometric indexes in patients with allergic rhinitis. Markedly elevated numbers of activated and degranulated eosinophils were observed in allergic rhinitis patients after allergen exposure. In mouse models of allergic lung inflammation, eosinophils can enhance allergic inflammation by promoting the recruitment of T helper type 2 (Th2) cells and interacting with dendritic cells.[6-8] Hence; the present study was evaluated for assessing absolute eosinophil count in allergic rhinitis Patients.

MATERIALS & METHODS

The present study was evaluated for assessing absolute eosinophil count in allergic rhinitis Patients. A total of 140 patients with allergic rhinitis were enrolled. The study was conducted from January 2019 to august 2019 at Government medical College, Datia, Madhya Pradesh. Detailed evaluation of the patients was done on the basis of history, clinical examination and diagnostic nasal endoscopy. Careful examination of the patients was donefor evaluating ear, nose, throat and Respiratory system. The clinical signs and of allergic rhinitis include bogy oedematous nasal mucosa, turbinate hypertrophy, and thin watery mucous in nose. Blood samples were obtained from all the patients and absolute eosinophil count was assessed. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

RESULTS

Mean age of the patients was 38.4 years. 83 patients belonged to the age group of 21 to 40 years. 53.57 percent of the patients were females while the remaining 46.43 percent of the patients were males. While grading the patients according to severity of allergic rhinitis, it was seen that 61.43 percent of the patients (86 patients), 21.43 percent of the patients (30 patients) and 17.14 percent of the patients (24 patients) were suffering from mild, moderate and severe grade of allergic rhinitis. While classifying patients on the basis of eosinophil count, it was seen that in 64.29 percent of the patients (90 patients), absolute eosinophil count was more than 440 cells/cu mm while in the remaining 35.71 percent of the patients, it was less than 440 cells/cu mm. Mean absolute count was 482.3 cells /cu mm. Mean absolute eosinophil count among patients with only nasal symptoms, nasal + ocular symptoms and among patients with nasal + respiratory symptoms was 339.5 cells/cu mm, 302.4 cells/cu mm and 493.2 cells/cu mm respectively.

Table 1: Distribution of patients according to severity of allergic rhinitis

Severity	Number	Percentage
Mild	86	61.43
Moderate	30	21.43
Severe	24	17.14
Total	140	100

Table 2: Distribution of patients according to absolute neutrophil count

Absolute neutrophil count	Number	Percentage
<400 cells/ cu mm	50	35.71
>400 cells/cu mm	90	64.29
Total	140	100

DISCUSSION

Allergic rhinitis (AR) is a common disorder that afflicts 400 million people worldwide and it represents a global concern as its prevalence has increased over the years. AR usually

comorbids with other diseases such as asthma, leading to impaired quality of life, school or work performance, and significant financial impact. AR is shown to be caused by aberrantly high Th2 cytokines, and recent findings on the cause of AR are directed toward impairment of the nasal epithelial barrier integrity.[4,6] Most allergic rhinitis patients can be diagnosed by a combination of history, clinical examination and allergy tests such as skin prick test, radioallergosorbent test for specific IgE, absolute eosinophil count (AEC), total serum IgE level, and nasal cytology for eosinophils. An absolute eosinophil count is a blood test that measures the number of one type of white blood cells called eosinophils.[8-10] hence; the present study was evaluated for assessing absolute eosinophil count in allergic rhinitis Patients.

In the present study, 83 patients belonged to the age group of 21 to 40 years. 53.57 percent of the patients were females. In a similar study conducted by Muddaiah D et al, 66.9 percent of the patients belonged to the age group of 21 to 40 years with 53.75 percent of the patients being females.[11] in a similar study conducted by Patel AK et al, a total of 70 patients were enrolled with a mean age of 32.67. Female patients were 47.14 percent.[12] in the present study, while grading the patients according to severity of allergic rhinitis, it was seen that 61.43 percent of the patients (86 patients), 21.43 percent of the patients (30 patients) and 17.14 percent of the patients (24 patients) were suffering from mild, moderate and severe grade of allergic rhinitis. In a similar study conducted by Muddaiah D et al, majority of the patients were of mild allergic rhinitis type (66.3 percent).[11]In the present study, while classifying patients on the basis of eosinophil count, it was seen that in 64.29 percent of the patients (90 patients), absolute eosinophil count was more than 440 cells/cu mm while in the remaining 35.71 percent of the patients, it was less than 440 cells/cu mm. Our results were in concordance with the results obtained by previous authors who also reported similar findings. In a study conducted by Muddaiah D et al, 59.4 percent of the patients had absolute eosinophil count of more than 440 cells/cu mm.[11]

In the present study, mean absolute eosinophil count among patients with only nasal symptoms, nasal + ocular symptoms and among patients with nasal + respiratory symptoms were 339.5 cells/cu mm, 302.4 cells/cu mm and 493.2 cells/cu mm respectively. Our results were in concordance with the results obtained by Patel et al who also reported similar findings. In their study, Mean absolute eosinophil count among patients with only nasal symptoms, nasal + ocular symptoms and among patients with nasal + respiratory symptoms was 307.6 cells/cu mm, 282.83 cells/cu mm and 460 cells/cu mm respectively.[12] In a previous study conducted by Agrawal A et al, authors determined the diagnostic utility of Serum IgE and absolute eosinophil count in cases of Allergic rhinitis. 105 cases which were clinically diagnosed as allergic rhinitis were enrolled. Absolute eosinophil count and total serum IgE were recorded for all the cases. Among 105cases, 44.8% were females and 55.2% were males, with mean age of 29.8years. Peripheral blood eosinophils >6% were seen in 42% cases. Of the total cases, Absolute eosinophil count was increased>450cells/cu mm in 49 (46.6%) cases and Serum IgE was elevated >120IU/ml in 73(69.5%) cases. Both AEC and Serum IgE together were raised only in 39(37.1%) cases. Thirty-nine (37.1%) cases showed simultaneous increase in AEC and Serum IgE.[13]Gowthami MRScorrelated Nasal smear eosinophilia (NSE), blood absolute eosinophil count (AEC) and total serum IgE levels with severity of the clinical score in patients with allergic rhinitis. Patients (n=60) presented with allergic rhinitis were subjected for blood AEC, IgE levels and nasal smears for eosinophils. Among the samples, 81.7% were males. The mean age of patients was 35.2 years. AEC > 440 cells/cu.mm was seen in 46.6%, NSE>10% in 81.6% and total serum IgE was elevated > 100 IU/ml in 95.0%. There was a good correlation of NSE and serum IgE with the severity of disease. There was no correlation of blood AEC with the severity of clinical score.[14]

CONCLUSION

From the above results, the authors concluded that absolute eosinophil counts are done in all cases of rhinitis as it is cost effective and easily accessible.

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