



Original Research Article

Prevalence of eosinophilia in motor company patients

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ARTICLE INFO

Article history:

Received 24-09-2019

Accepted 19-10-2019

Available online 07-01-2020

Keywords:

eosinophilia
motor company
haematology
allergy
hypersensitivity

ABSTRACT

Introduction: Eosinophil levels of blood utilized to assess occupational allergic responses among motor company workers in Chennai. Allergy is hypersensitivity disorder of immune system in response to allergic substances called allergens. Common allergens include pollen, pesticides, food, insects, dust, or mould. Eosinophilia can also be seen in conditions like acute myeloid leukemia, Churg Strauss syndrome, in response to drugs, parasites.

Aim and Objective: To study the prevalence of eosinophilia present in blood samples in a group of workers from a motor company without any clinical complaints who came for master health check-up at Saveetha Medical College and Hospital and to also study other parameters: age, sex, smoking habits, atopy.

Materials and Methods: 290 haematology reports were taken from motor company workers who came for master health check-up at Saveetha Medical College Hospital. Samples were analysed by automated haematology analyser.

Results: 290 haematology reports were analysed. Among these, 21% (62 patients) having eosinophilia wherein 88% having mild eosinophilia, 12% having moderate eosinophilia, none of the samples show severe eosinophilia. None of them having significant clinical symptom.

Conclusion: Eosinophilia was seen in patients without any clinical symptoms. Mild to moderate eosinophilia was observed. There were no cases of severe eosinophilia.

There was no significant relationship, suggesting that the nature of job undertaken by these motor company employees has nothing to do with eosinophilia in blood.

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1. Introduction

Eosinophils are a type of white blood cells which are released in response to allergy, atopy, parasitic and fungal infections. Normally 1-6 % of WBC's consist of eosinophils. They develop from bone marrow under the influence of interleukin-5.¹ After release they migrate to inflammatory sites, sites of helminthic infections which is controlled by chemokines released from these sites. After activation of eosinophils at the site of infection they degranulate and release reactive oxygen species, leukotrienes, prostaglandins, growth factors such as TGF, VEGF, PGDF, and cytokines likes interleukins and TNF alpha. The eosinophils contain numerous granule cationic

proteins such as major basic protein (MBP), eosinophil peroxidase (EPX), eosinophil cationic protein (ECP).²

The normal eosinophil count is 350-500 cells per microliter of blood. A count more than 500 cells per microliter of blood is called eosinophilia. Eosinophilia is seen in asthma, allergies, parasitic infections, systemic lupus erythematosus, allergic rhinitis, atopic dermatitis, autoimmune disorders, rheumatoid arthritis. Eosinophilia can also be seen in conditions like acute myeloid leukemia, Hodgkin's lymphoma, Churg Strauss syndrome, in response to drugs, parasites.³

Eosinophil levels of blood is utilized to assess occupational allergic responses among motor company workers in Chennai. Allergy is hypersensitivity disorder of immune system in response to allergic substances called allergens. Common allergens include pollen, pesticides,

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food, insects, dust, or mould.

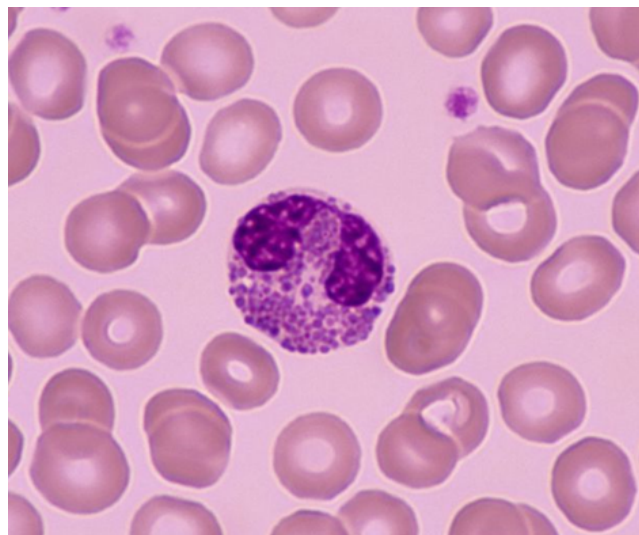


Fig. 1: Normal Eosinophil

2. Aim and Objective

To study the prevalence of eosinophilia present in blood samples in a group of workers from a motor company without any clinical complaints who came for master health check-up at Saveetha Medical College and Hospital. And also study other parameters like age, sex, smoking habits and atopy.

3. Materials and Methods

It is a retrospective study. We have taken complete haemogram reports of 290 motor company workers from ages 20-30 who came for master health check-up at Saveetha Medical College Hospital. Samples were analysed by automated haematology analyser, it works on the principle of electrical impedance, fluorescence, light scatter, light absorption, electrical conductivity. Based on AEC (absolute eosinophil count) they were classified into mild, moderate and severe eosinophilia. Mild being 500-1500 cells/microL. Moderate being 1500-5000 cells/microL. And severe being more than 5000 cells/microL.

4. Results

21% of patients (62 out of 290) evaluated had eosinophilia.

Out of these 62 patients the age distribution was as follows: 39% were 21 years old. 37 % were 20 years old. 11% were 23 years old. 6% were 22 years old. 2% were 30 years old. 1% were 24 years old. 1 % were 25 years old.

The criteria for eosinophilia is as follows; mild: 500-1500 cells/ microL. Moderate: 1500-5000 cells/microL. Severe: more than 5000 cells/microL.

Table 1:

Age	Number of patients
20-25	60
26-30	2
Total	62

The following was observed: 88% had mild eosinophilia. 12% had moderate eosinophilia. 0% had severe eosinophilia.

Personal history: 32% of patients had a significant history of cigarette smoking and have mild eosinophilia.

5% of patients had a family history of atopy and have mild eosinophilia.

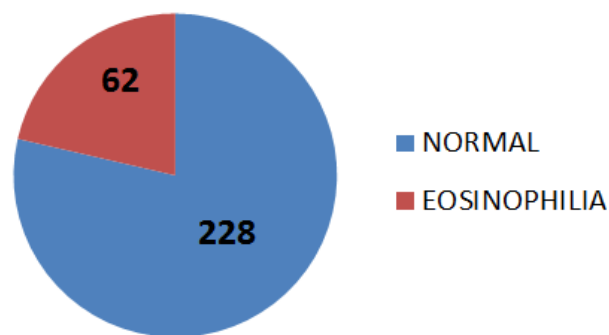


Fig. 2:

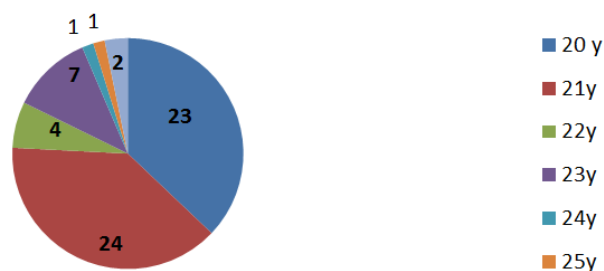


Fig. 3:

5. Discussion

Eosinophilia was detected in about 21% of motor workers who visited the hospital. This study is limited as all subjects used are male.

Eosinophilia is an abnormal increase in count of eosinophils in peripheral blood or in tissues. IL-5 is the dominant eosinophil growth factor.¹ Causes of

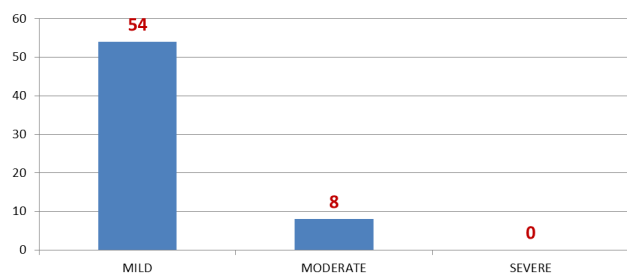


Fig. 4:

eosinophilia can be allergic: asthma, rhinitis; helminthic infections: ascariasis, schistosomiasis, strongyloidiasis; connective tissue disorders: rheumatoid arthritis, Churg-Strauss vasculitis.³

In a study done to compare eosinophilia in rural population of Hoskote and eosinophilia in urban population of Bangalore. Here prevalence of eosinophilia in the rural population was 20% compared to 8% in the urban population. The mean age of the males in the study was 39.4 which is of less relevance as our study has workers 20-25 years of age.⁴

Most frequent complaints of patient are skin rashes, itching, cough, sneezing, rhinitis, wheezing, dyspnoea, redness and watery eyes. A recent or current history of drugs ingestion or medication may be important in some cases.⁵

In a study by Tjeert et al there was a significant increase in blood eosinophilia in males compared to females due to cigarette smoking. In that study there is also an increase in total number of leukocytes due to cigarette smoking. Eosinophilia was more common in males than in females.⁶

In a study by Rimpi Bansal et al about eosinophilia in rural population, there was highest incidence of eosinophilia in males in the second decade of life. 62% patients had mild eosinophilia, 37.7% had moderate eosinophilia and 0.3% had severe eosinophilia which is similar to our study. The primary stimuli for eosinophil production are interleukin (IL)-5, IL-3 and granulocyte-macrophage colony-stimulating factor (GM-CSF). Eosinophilia is common in the rural population. Commonly caused by parasitic, protozoal or fungal infections.⁷ The most common etiology for eosinophilia is allergy, asthma, intestinal helminthes, skin urticarial. In our study it can also be caused due to factory fumes and the work environment in motor company.

In another study no provisional diagnosis could be made in 70% of the patients with eosinophilia. The most common presenting symptom were anorexia, pain abdomen, fever, cough. Peripheral smear and bone marrow examination were normocellular, normochromic in most of the patients. The absolute eosinophil count (AEC) tends to resolve on its own over a period of time.⁸

In tropical countries like India, the most common cause of eosinophilia is parasitic infestation, unhygienic living

conditions and poor sanitation. In a study conducted in rural population of northern Kashmir in India eosinophilia is common due to poverty, hygiene, diet and due to unavailability of facilities.⁹

A study done in the significance of eosinophilia in returning travellers from countries such as India, Africa, south America, only 38.3% of all helminthic infections had blood eosinophilia.¹⁰

Higher sputum and blood eosinophil counts are associated with increased corticosteroid responsiveness in COPD patients in a study about eosinophilic inflammation in COPD.¹¹

In a study done among the prevalence of latent eosinophilia among occupational gardeners at Babcock University, there was significant correlation between eosinophilia and the nature of job. There was increased eosinophil in blood and sputum samples among gardeners who have been exposed to allergens for longer periods of time.¹²

Therefore all workers are advised to wear safety equipment and periodic medical screening should be done among factory workers.

In one study, there was an increase in eosinophils and neutrophils after asthmatic reactions after exposure to high molecular weight agents.¹³

6. Conclusion

Eosinophilia was seen in patients without any clinical symptoms. Mild to moderate eosinophilia was observed. There were no cases of severe eosinophilia.

There was no significant relationship, suggesting that the nature of job undertaken by these motor company employees has nothing to do with eosinophilia in blood.

7. Conflict of interest

None

8. Source of funding

None

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Cite this article: P M, Padmapriya BS, Harikrishnan V, Srinivasan C. Prevalence of eosinophilia in motor company patients. *Arch Cytol Histopathol Res* 2019;4(4):297-300.