



## Case Report

### Pleomorphic T- cell Immunoblastic Non-Hodgkin's Lymphoma with Peripheral Eosinophilia: A Case Report

Manisha Sharma<sup>1</sup>, Rahul Mannan<sup>2\*</sup>, Mohit Madhukar<sup>3</sup>, Mridu Manjari<sup>4</sup>, Jasmin Kaur Bawa<sup>5</sup>

<sup>1&2</sup>Associate Professors, <sup>3&5</sup>Residents, <sup>4</sup>Professor, Department of Pathology, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar (Punjab) India.

#### ABSTRACT

Hypereosinophilia is defined as peripheral blood eosinophil count > 1500/ l and is often seen associated with many hemato-lymphoid malignancies. The present case describes a 75 year old male who presented initially with eosinophilia and complaints related to allergic bronchitis and atopy. After a period of irregular follow – up (two years after his initial diagnosis) patient came in emergency with severe dyspnoea and cough. Chest X-Ray showed multiple hilar opacities with CT chest revealing mediastinal lymph nodes including cervical and supra-clavicular lymphadenopathy. Hematological findings were leucocytosis with hypereosinophilia. (Total leukocyte count-65,000/cumm, comprising of 80% eosinophils, 09% neutrophils and 11% lymphocytes). Fine needle aspiration done from various sites was suggestive of lymphoproliferative disorder. On histopathology; working diagnosis of NHL- Large cell type was rendered with IHC showing immunopositive for LCA(CD<sub>45</sub>)/CD<sub>3</sub> /CD<sub>45RO</sub>, and immunonegative for CD<sub>7</sub>/ CD<sub>20</sub>. The Ki-67 index was 90%. Hence a final diagnosis of Pleomorphic T –cell Lymphoma High grade (Large Cell, Immunoblastic Lymphoma of T-cell Type of WHO/REAL Working Formulation) was rendered. HES has two pathogenic forms – myeloproliferative and lymphocytic. Lymphocytic – HES which is associated with increased risk of developing a T-Cell lymphoma later on due to secretion of IL-5 by abnormal clonal T- cells. It is recommended in all the cases of long standing eosinophilia and HES patient to be kept under follow up for early detection of development of T-cell lymphoma.

**KEYWORDS:** Eosinophilia, Non Hodgkins Lymphoma, Immunoblastic.

#### INTRODUCTION

The term hypereosinophilic syndrome (HES) includes a group of disorders ranging from idiopathic, allergic, auto-immune to haemato-lymphoid/ solid malignancies [1]. Research has showed that HES is sub-typed as- myeloproliferative and lymphocytic. Lymphocytic variant of HES has been shown to precede development of a T- cell lymphoma [2]. We report a case of 75 year old male who presented initially with eosinophilia and later on developed non hodgkin's lymphoma (NHL) of T-cell type.

#### CASE REPORT

A 75 years old male was on follow up in the department of medicine for complains of breathlessness, cough, wheezing, coryza with seasonal exacerbation for the past 2 years. On his first visit to the outpatient, his initial physical examination especially the chest auscultation revealed slight bilateral wheeze. No cardiac abnormalities were found. A chest skiagram was mostly unremarkable apart from bilateral lower zone nodular opacities. Haematological assessment revealed eosinophilia ( total leucocyte count-

6100 cells/ cu mm with a differential count of polymorphs- 42 %, Lymphocytes- 28%, Monocytes- 02%, Eosinophils- 28% ).He was investigated for eosinophilia but all the biochemical, serological (anti-nuclear, anti-parasitic antibodies), stool examination, ultrasonography of abdomen were normal or unremarkable. Based on these findings he was diagnosed as suffering from atopy with allergic bronchitis as working diagnosis.

Patient was put on anti-helminthic, anti-histamines and general hematinics and advised to remain on monthly follow-up. The patient was irregular with his follow up. During a period of two years he only came thrice for the follow up after which he did not report to the outpatient or the clinical laboratory of the hospital for the past 9 months.

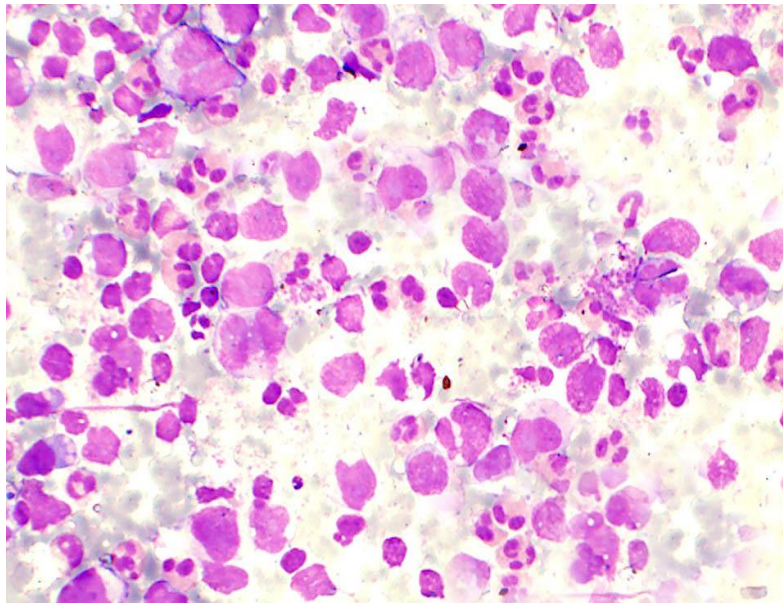
Two years later after his first working diagnosis; patient reported in the emergency unit and was admitted in the hospital with the complaints of cough and difficulty in breathing. It was not associated with any fever and chest pain. On physical examination bilateral cervical lymphadenopathy was noted with multiple enlarged lymph nodes with the largest node measuring 2.5X2.5 cms and was

located in the right supraclavicular region. Chest X- ray showed multiple hilar opacities. CT chest revealed multiple enlarged mediastinal lymph nodes with the largest node in subcarinal region measuring 5X4 cms. Similarly CT head and neck revealed enlarged lymph node masses on level IA, IV on left side and level II,III,IV with supraclavicular region node measuring 28X21 mm on right side.

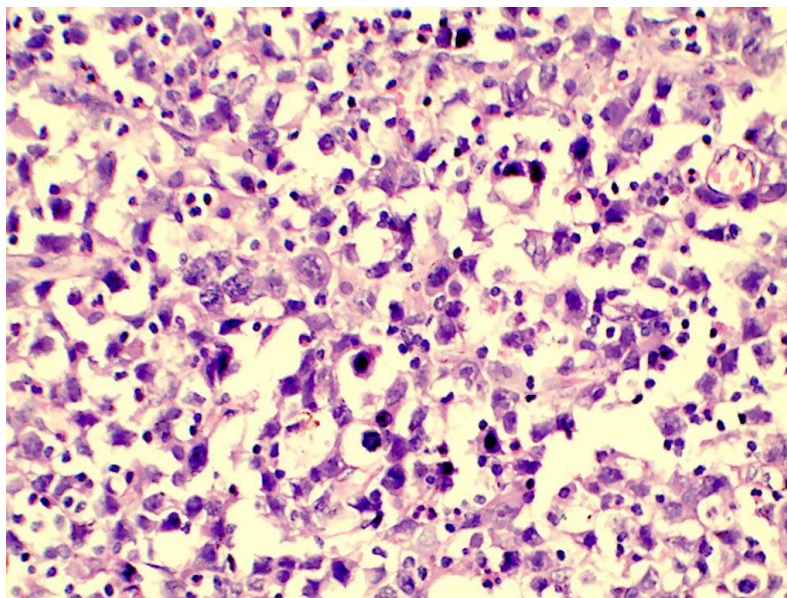
Laboratory data revealed leucocytosis with hypereosinophilia. (Total leukocyte count-65,000/cumm, comprising of 80% eosinophils, 09% neutrophils and 11%

lymphocytes). Haemoglobin, RBC count, Red cell indices and platelet count were within normal limits. The patient underwent a fine needle aspiration (FNA) of right supraclavicular lymph node which showed the features of lymphoproliferative disorder with the presence of large lymphoid cells with vesicular chromatin, prominent nucleoli and irregular nuclear membrane along with abundant eosinophils in the background. [Figure-1] Biopsy for histopathological examination was advised for further evaluation.

**Figure 1: FNA smears showing large atypical lymphoid cells with abundant eosinophils in the background. (MGG X 1000)**



**Figure-2 Histopathological section exhibiting atypical lymphoid cells with eosinophils. ( H & E 400 X)**



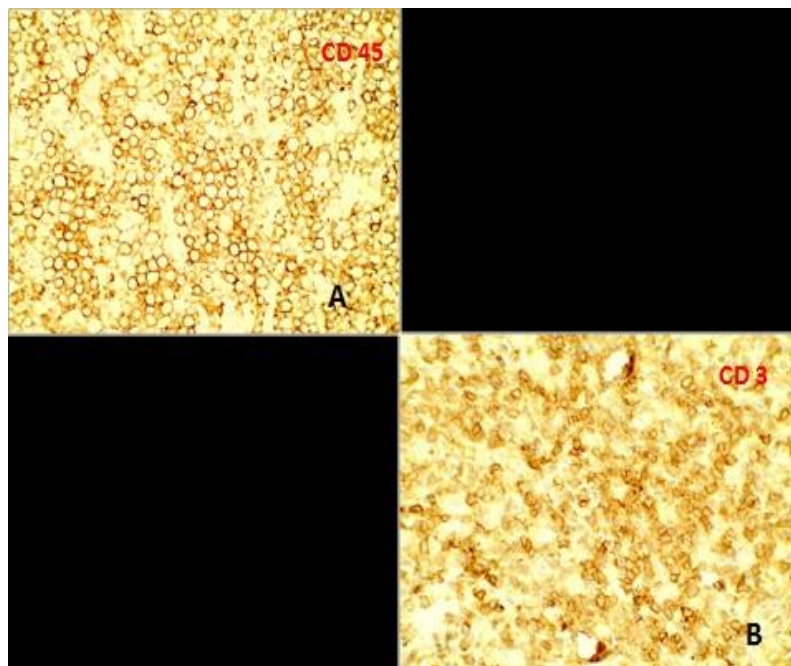
An excision biopsy was performed which revealed a well encapsulated but matted lymph node mass measuring 4X3X2 cms. Cut section was homogenous solid with fleshy grey-white appearance. On microscopy, a pleomorphic population of highly atypical lymphoid cells replacing the nodal parenchyma was noted with total loss of nodal

architecture. Individually, several mono-nucleated and bi-nucleated cells were seen with vesicular nuclei and prominent eosinophilic nucleoli along with fair number of eosinophils. Mitosis up to 7 mitotic figures /10 high power field were noted. [Figure-2]

A provisional diagnosis of Non Hodgkin Lymphoma- Large cell type was suggested. The immunohistochemical (IHC) studies were further recommended for proper subtyping.

On IHC the lymphoid cells displayed the immunoreactivity for LCA(CD45)/CD3 /CD45RO, and immunonegative for CD7/CD20. The Ki-67 index was 90%. [Figure-3]

**Figure 3: IHC Panel -- Figure 3 A- Membranous immunopositivity of CD 45, Figure 3 B- Immunopositivity of CD3**



Hence a final diagnosis of Pleomorphic T –cell Lymphoma High grade (Large Cell, Immunoblastic Lymphoma of T-cell Type of WHO/REAL Working Formulation) was rendered.

Patient was referred to the oncology unit of a higher apex centre for further management.

## DISCUSSION

Eosinophilia has many causes ranging from allergic disorders to Hyperimmunoglobulin E syndrome. Hypereosinophilia, defined as peripheral blood eosinophil count > 1500/ l, may be seen associated with many hematolymphoid malignancies such as Hodgkin disease and in certain NHL especially Peripheral T-Cell lymphoma. These T- Cell NHL mostly include patients of Sezary syndrome, adult T-Cell leukemia/lymphoma and angioimmunoblastic T-Cell lymphoma [3]. Increased incidence of eosinophilopoiesis noted in T-Cell malignancies is attributed to the secretion of Interleukin- 5 by abnormal clonal T-Cell immunophenotypes as IL-5 is a known stimulant for eosinophil maturation [4].

In recent years it has been documented that erstwhile HES has two pathogenic forms – myeloproliferative (displaying clonal myeloid eosinophil and eosinophil precursor population – demonstrating FIPIL 1- PDGFRA mutant gene) and lymphocytic form ( associated with neoplastic helper T-cell secreting IL-5). It is the lymphocytic – HES which is associated with increased risk of developing a T-Cell lymphoma later on [5, 6, 7, 8].

Lymphocytic HES has led to the differentiation from the earlier umbrella term of idiopathic HES, as it is now defined as a primitive disorder characterized by a non- malignant expansion of a T-cell population producing IL-5 in patients with HES [9].

In the present case also at the initial presentation patient had eosinophilia not associated with any major disorder but later

on presented with cervical as well as mediastinal lymphadenopathy with a final diagnosis of pleomorphic T-Cell lymphoma – high grade with peripheral eosinophilia. Most of the investigations which can prove the case to be that of Lymphocytic – HES such as flow cytometry and T-cell receptor (TCR) gene pattern assay, T-cell culture and equipment to assess cytokine production [9, 10] are available at very few centers in third world countries. These investigations were not done in the present case when admitted later on as firstly, he had already developed T-Cell NHL and secondly due to economic constraints.

The present case report is worth publishing as it not only describes a novel variant of T-Cell lymphoma- Pleomorphic –T-Cell lymphoma high grade (large cell, immunoblastic) with peripheral eosinophilia but also highlight the importance of keeping patients with long standing eosinophilia or HES on routine follow up for early detection of development of T-Cell lymphoma. In all these cases, flow cytometry should be done to diagnose Lymphocytic- HES.

## REFERENCES

1. Klion AD. How I treat hypereosinophilic syndromes. *Blood*. 2009; 114:3736-41.
2. Simon HU, Rothenberg ME, Bochner BS, et al. Refining the definition of hypereosinophilic syndrome. *J Allergy Clin Immunol*. 2010; 126: 45-9.



3. Roufosse F, Garaud S, de Leval L. Lymphoproliferative disorders associated with hypereosinophilia. *Semin Hematol.* 2012 ;49(2):138-48.
4. Hans-Uwe S, M.D., Sabine G P, M.D., Reinhard Dummer, M.D., and Kurt Blaser, Ph.D. Abnormal Clones of T Cells Producing Interleukin-5 in Idiopathic Eosinophilia. *N Engl J Med* 1999 ; 341:1112-20.
5. Gleich GJ, Leiferman KM. The hypereosinophilic syndromes: current concepts and treatments. *Br J Haematol* 2009; 145: 271-85.
6. Simon HU, Plotz SG, Dummer R, Blaser K. Abnormal clones of T cells producing interleukin-5 in idiopathic eosinophilia. *N Engl J Med* 1999; 341: 1112-1120.
7. Fletcher S, Bain B. Diagnosis and treatment of hypereosinophilic syndromes. *Curr Opin Hematol.* 2007; 14: 37-42.
8. Cogan E, Schandene L, Crusiaux A, Cochaux P, Velu T, Goldman M. Brief report: clonal proliferation of type 2 helper T cells in a man with the hypereosinophilic syndrome. *N Engl J Med.* 1994; 330: 535-8.
9. Kei K, Machiko A, Yasuyuki A, Kaori U, Masahiro I, Tomoyasu J, Satoshi K, Tadashi I. Peripheral T-cell Lymphoma not Otherwise Specified (PTCL-NOS) in a Patient with Hypereosinophilic Syndrome Showing Multiple Nodules on Chest Computed Tomography. *Intern Med.* 2011; 50: 2417-21.
10. Simon HU. Eosinophilic Disorders. *Journal of Allergy and Clinical Immunology.* 2010; 119 (6): 1291–300.

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\*Corresponding author: Dr. Rahul Mannan  
E-Mail: [rahulmannan@gmail.com](mailto:rahulmannan@gmail.com)