

## Tropical Pulmonary Eosinophilia with Eosinophilic Leukemoid Reaction

\*Manish Kumar<sup>1\*</sup>, Devki Nandan<sup>1</sup>, Wonashi Tsanglao<sup>1</sup>, Chinmay Sahoo<sup>1</sup>, Binay Ranjan<sup>2</sup>

<sup>1</sup>PGIMER, Dr. RML Hospital, New Delhi, India.

<sup>2</sup>Mahavir Vaatsalya Aspatal, India.

### Abstract

A 7 year-old male presented with recurrent fever, cough and respiratory distress for over last 2 years. Based on extremely high eosinophil count, high Immunoglobulin E, increase in eosinophilic precursors in bone marrow, and positive antigen test for *Wuchereria bancrofti*, a diagnosis of Tropical Pulmonary Eosinophilia with Eosinophilic Leukemoid Reaction was made. Complete recovery was achieved with Diethylcarbamazine for 3 weeks. We are reporting this case as the first case of Tropical pulmonary eosinophilia with eosinophilic leukemoid reaction in a child.

**Key Words:** Diethylcarbamazine, Eosinophilia, IgE, Leukemoid Reaction, TPE.

\*Please cite this article as: Kumar M, Nandan D, Tsanglao W, Sahoo Ch, Ranjan B. Tropical Pulmonary Eosinophilia with Eosinophilic Leukemoid Reaction. Int J Pediatr 2016; 4(3): 1579-81.

### \*Corresponding Author:

Manish Kumar, MD, Dr. RML Hospital, New Delhi, India.

Email: [drmanishkrmdpeds@gmail.com](mailto:drmanishkrmdpeds@gmail.com)

Received date Jan 10, 2016 ; Accepted date: Feb 22, 2016

## 1- INTRODUCTION

Tropical pulmonary eosinophilia (TPE) is a syndrome that develops in some individual infected with either *Wuchereria bancrofti*, or *Brugia malayi*. In this condition, eosinophilia is one of the diagnostic criteria, but eosinophilic leukemoid reaction in tropical pulmonary eosinophilia is rare. Only one case of TPE with such degree of eosinophilia has been reported in literature, that too in an adult (1).

## 2- CASE REPORT

A 7- year- old male child presented with fever, cough and exertional breathlessness for last 15 days. History of similar episodes occurring every 2-3 months since the age of 2 years was also present. These episodes were managed with oral medications every time. Family history of allergies or asthma was absent.

At the time of admission, child was not distressed, was afebrile, PR- 114/min, RR- 30/min and had bilateral crackles and rhonchi. Other system examinations were normal.

Complete blood count done at the time of admission showed Hb- 13.4 g/dl, TLC- 84,500 cell/cmm with 75% eosinophils, normal liver function tests (Serum Bilirubin- 0.8 mg/dl, SGOT-22U/L, SGPT-28 U/L, S. Protein- 6.5 g/dl, Albumin-4.0 g/dl, Globulin-2.5 g/dl) and kidney function tests (Blood Urea-18 mg/dl, Serum Creatinine-0.6 mg/dl). Chest X-ray showed hyperinflation of both lung fields with a pneumonic patch in right lower lobe. Serum IgE level was 9,315 kUA/L (normal <63kUA/L). Bronchoalveolar lavage showed few eosinophils; Echo-cardiography was normal.

Immunoglobulin profile was normal and ANCA was negative. Peripheral smear did not show any abnormal blood cells or microfilaria. Stool test on three

consecutive days were negative for ova or cysts. CECT chest showed air bronchogram with consolidation in right lower lobe. Pulmonary function test was suggestive of obstructive lung disease (FEV1 - 77%, PEF- 70% and FVC- 84%). IgE specific for aspergillosis was negative. Serology for hepatitis B and HIV were nonreactive. Bone marrow examination showed an increase in eosinophilic precursors with no abnormal cells. The immunochromatographic test for *Wuchereria bancrofti* was positive.

Child was diagnosed as a case of Tropical filarial pulmonary eosinophilia with eosinophilic leukemoid reaction. He was treated with IV injection. Ceftriaxone (50mg/kg/day), oral Diethylcarbamazine (6mg/kg/day), single dose of oral Albendazole (400 mg) and nebulization with Salbutamol, Ipratropium and saline (3%). His symptoms gradually resolved over next 4-5 days. Meanwhile, after 15 days of treatment, the total count gradually decreased to 10,000/cmm with only 3% eosinophils.

## 3- DISCUSSION

Tropical pulmonary eosinophilia is a condition that develops with either *Wuchereria bancrofti* or *Brugia malayi* (2, 3). Diagnosis of TPE rests on the following criteria:

- Cough worse at night;
- Fever;
- Residence in a filarial endemic area;
- The eosinophil count greater than 3,000 cells mm<sup>-3</sup>;
- Clinical and hematological response to DEC (2-4).

Our case fulfilled all these criteria. The definitive diagnosis is made only by detection of parasites, parasite antigen or parasitic DNA. Assays for circulating antigens of *Wuchereria bancrofti*, permit the diagnosis of both microfilaremic and

amicrofilaremic infections. Filarial antigen in serum by immunochromatographic method was positive in this case. In the endemic area, the specificity of this test is up to 100% (2, 5).

Tests for pulmonary function show restrictive abnormalities in most cases and obstructive in a few (2). In our case, obstructive pattern was seen on pulmonary function test. A leukemoid reaction is defined as a clinical syndrome in which changes are found in the peripheral blood resembling leukemia with the important difference that the former is not an unregulated proliferation of leukocytes but an expression of bone marrow response to some underlying cause (6). Eosinophilic leukemoid reactions are often seen in parasitic, allergic, neoplastic, dermatologic, collagen vascular diseases and in drug reactions (6).

#### 4- CONCLUSION

There is not even a single case of eosinophilic leukemoid reaction reported with tropical pulmonary eosinophilia syndrome in pediatric age group till date to the best of our knowledge. This eosinophilic leukemoid reaction resolved with treatment by antifilarial agent.

**5- CONFLICT OF INTEREST:** None.

#### 6- ABBREVIATION

- PR: Partial response.
- RR: Respiratory rate.
- Hb: Hemoglobin.
- TLC: Total lymphocyte count.
- SGOT: Serum Glutamic-Oxalocetic Transaminase – AST.
- SGPT: Serum glutamic pyruvic transaminase.
- IgE: Immunoglobulin E.
- ANCA: Antineutrophil cytoplasmic antibodies.

- CECT: Contrast enhanced computed tomography.
- FEV1: Forced Expiratory Volume in the first second.
- PEF: Peak expiratory flow;
- FVC: Forced Vital Capacity;
- DEC: Diethylcarbamazine.

#### 7- REFERENCES

1. Song SH, McIntyre SS, Shah H, Veldhuis JD, Hayes PC, Butler PC. Tropical pulmonary eosinophilia masquerading as eosinophilic leukemia. *Indian Medical Gazette* 2012;124.
2. Guerrant RL, Walker DH, Weller PF. *Tropical infectious diseases (Principles, pathogens and practice)*. 3<sup>rd</sup> Edition. Elsevier; 2006: 733-742.
3. Mandell D. *Benett's Principles and practice of infectious diseases*. 7<sup>th</sup> edition. Churchill: Livingston; 2010.p.3592.
4. CoorayJH, Ismail MM. Re-examination of the diagnostic criteria of tropical pulmonary eosinophilia. *Respir Med* 1999; 93(9):655-59.
5. Braga C, Dourado MI, Ximenes RA, Alves L, Brayner F, Rocha A, et al. Field evaluation of the whole blood immunochromatographic test for rapid bancroftian filariasis diagnosis in the northeast of Brazil. *Rev Inst Med Trop Sao Paulo* 2003; 45(3): 125-29.
6. Silver RT. Leukemoid reactions. In: Wyngaarden JB, Lloyd HS (editors). *Cecil textbook of Medicine*. 19th ed. Tokyo: WB Saunders; 1992: 917-18.