Tropical Pulmonary Eosinophilia with Eosinophilic Leukemoid Reaction

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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.


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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⁻³;
- 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. Filaralial antigen in serum by immune-
chromatographic 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