Case Report

Eosinophilic Pleural Effusion: A Rare Manifestation of Hypereosinophilic Syndrome

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Keywords :

ABSTRACT

Several cases of eosinophilic pleural effusions have been described with malignancy being the commonest cause. Hypereosinophilic syndrome is a rare disease and very few cases have been reported of HES presenting as eosinophilic pleural effusion. We report a case of 36 year old male who presented with dry cough and shortness of breath. He had bilateral pleural effusion with marked peripheral eosinophilia. This patient represents a very unusual presentation of HES with bilateral pleural effusion.

INTRODUCTION

Eosinophilic pleural effusion is defined as fluid with 10% or more eosinophils. Eosinophilic pleural effusions are uncommon with an incidence of 7.2% of all pleural effusion. The pathogenesis of eosinophilic pleural effusion involves increased production of eosinophils in the bone marrow, migration to the lungs , and extended survival of the eosinophils due to impaired apoptosis by IL-5, IL-3 and GM-CSF. The causes of EPE in order of frequency include malignancy (34.8%), infections (19.2%), idiopathic (14.1%), posttraumatic (8.9%), miscellaneous (23%).

Hypereosinophilic syndrome is defined as peripheral eosinophilia of 1.5 × 109/L , evidence of end organ involvement, and lack of evidence for other causes of eosinophilia. HES can be classified as myeloproliferative HES, lymphocytic HES, undefined HES, and idiopathic. Treatment of HES is based on control of peripheral eosinophilia.

CASE REPORT

A 36 year old Asian Indian male presented with complaints of dry cough and shortness of breath for over 8 months. He was previously healthy and presented with peripheral blood eosinophilia and bilateral effusion, 6 months back. Pleural fluid tapping was done multiple times but failed to demonstrate eosinophilia in the earlier reports. Reports showed an exudative effusion with normal ADA, with lymphocyte predominance and cytology report was negative for malignancy. Patient was given a trial of steroids and antihelminthics for 10 days initially to which the peripheral eosinophilia responded. He was started on empirical antituberculous treatment and continued it for 4 months. CECT thorax showed bilateral effusion ,right > left, with mild pericardial effusion. Ultrasonogram of abdomen and 2D echo showed normal study. Studies for parasitic infection were negative.

Patient came to us after 5 months of his initial presentation . We did a thoracoscopy on right side and pleural biopsy was taken. Pleural fluid reports was also sent. Pleural biopsy was suggestive of eosinophilic lung disease . Pleural fluid reports showed marked eosinophilia this time (70%). Pleural fluid CEA was normal. A diagnosis of hypereosinophilic syndrome was made by exclusion. Therapeutic tapping was done on the left side. Right side ICD was removed after 2 days and patient was discharged on steroids. Oral prednisolone 40 mg per day was started. He followed up after 1 month. Patient responded well to the treatment. Blood eosinophil counts were markedly reduced and chest radiograph showed marked improvement.

DISCUSSION

Idiopathic HES is a rare disorder first described in1968 by Hardy and Anderson. HES is now recognized as a clinically heterogeneous syndrome with a wide range of disease severity. HES is presence of hypereosinophilia together with eosinophilic tissue infiltration and organ damage (in the absence of other identifiable cause). Although persons of any age and maybe affected

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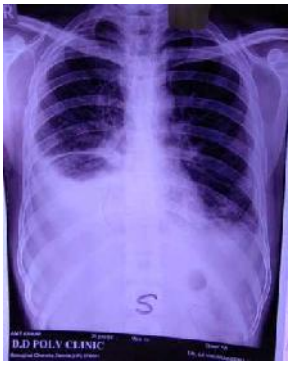
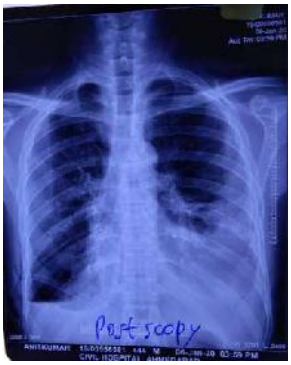
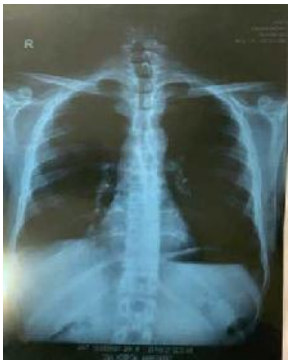
1. Initial Chest X-Ray



2. Post Thoracoscopy



3. After steroid treatment



4. Cect thorax

,disease onset is common between 20 and 50 years of age. Involvement of virtually every organ system has been described.

Several distinct clinical variants of HES have been recognized. Three of the most common are: i) myeloproliferative variant (primary /neoplastic HES) ii) lymphocytic variant (secondary, reactive HES), iii) idiopathic variant. In myeloproliferative variant, clonal expansion of eosinophils occurs and most common chromosomal abnormality is deletion of 4q12 leading to fusion of genes and activation of tyrosine kinase fusion protein F1P1L1-PDGFRA. Lymphocytic variant occurs in 30% of the cases where clonal expansion of Th2 T cells with abnormal surface antigen occurs. Skin and soft tissue involvement are predominant. Idiopathic variant is noted in 50% of cases where disturbances noted in previous variants are lacking but end organ damage is present.

Proper diagnosis of the subtypes has implications for choosing therapy for the disease. The tyrosine kinase inhibitor imatinib mesylate (400 mg per day) is the first line therapy for patients with PDGFRA-positive variant of HES. Patients with cardiac involvement should receive

Table I : Serial pleural fluid analysis reports of patient

Pleural Fluid	27/9/19	20/11/19	26/12/19	2/1/19
Glucose	43	86	74	-
Protein	5.90	6.80	5.60	-
Cell count	150	350	4200	-
Neutrophils	70%	90%	80%	1%
Lymphocytes	30%	10%	20%	29%
Eosinophils	-	-	-	70%
ADA	14.2	18.1	47	-
Cytology	Negative for malignancy	Negative for malignancy	Negative for malignancy	Eosinophil rich effusion

concomitant steroids to avoid further cardiac damage potentially induced by imatinib. A mainstay of therapy for persons with HES and organ involvement who lack FIPILI/PDGFRA fusion include corticosteroids such as prednisolone 1mg/kg/d for several weeks ,with taper of dose attempted to every other day regimen once eosinophil levels are reduced. Interferon α (IFN-α) can be tried as a second line agent among patients with HES who fail to respond to steroid treatment or as a steroid sparing agent. Mepolizumab, anti IL-5 may reduce symptoms and eosinophilic organ involvement in patients with high IL-5 levels according to some studies. Case reports have demonstrated efficacy of anti-CD-52 antibody alemtuzumab that targets eosinophils and T-cells in the lymphocytic variant HES. Hydroxyurea (0.5 to 1.5 g per day) may be added to regimen if there is evidence of

further disease progression or steroid toxicity. Other chemotherapeutic agents like vincristine, etoposide, chlorambucil may be effective alternative agents for cases that are refractory to steroids.

Before the discovery of therapy , prognosis of HES was poor. Overall, without therapy, average survival was 9 months, and 3 to 4 year survival was estimated to be 10-12%.

Pulmonary involvement can be seen in 40%–60% of cases. The most common respiratory symptom is chronic, persistent cough. Patients may be misdiagnosed as having asthma. Pulmonary involvement may also be secondary to congestive heart failure or emboli originating from right ventricular thrombi or may reflect primary eosinophilic infiltration of lung parenchyma. HES rarely presents with eosinophilic pleural effusion. If pleural effusions are present in HES, they typically result from heart failure due to cardiac involvement. However our patient had a normal 2D echo. The diagnosis of HES was made by exclusion of other causes and fits in the idiopathic variant. Our patient responded well to steroids.

CONCLUSION

Pulmonary involvement can be seen in 40%–60% of cases of hyper eosinophilic syndrome. The most common respiratory symptom is chronic, persistent cough and can be misdiagnosed as asthma. HES rarely presents with pleural effusion. Early diagnosis often lead to appropriate management. Identifying the subtypes is also important as it has implications for choosing therapy for the disease.

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