Case Report

Wuchereria bancrofti Infection Causing Pleural Effusion

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Abstract

Presented here is a case of 46-year-old Hindu male with a complaint of progressive shortness of breath, chest discomfort, fever, generalized weakness, and malaise over 6 months. He had a past history of diabetes mellitus (on oral antihyperglycemic agents) and pulmonary tuberculosis, for which he took DOTS category-1 antitubercular treatment for 9 months about 10 years back. On examination, he was febrile with stable vitals; breath sounds diminished over the right side of chest with stony dull percussion note. A provisional diagnosis of right-sided pleural effusion was made, and chest X-ray posteroanterior (PA) view confirmed the same. Diagnostic thoracentesis was done, which showed that the fluid was exudative in nature. The microscopy of centrifuged fluid debris strikingly showed microfilariae of *Wuchereria bancrofti*. Eosinophils and macrophages were in plenty without any evidence of malignancy or lymphoma. The complete blood count confirmed eosinophil >30% with absolute eosinophil count to be 2400 cells. A diagnosis of filarial pleural effusion was made, and he was started on antihelminthic medication. There was a remarkable improvement in his symptoms over 14 days of starting the therapy. He was maintained on drugs for 6–8 months. There was complete resolution of his effusion and respiratory symptoms.

Keywords: EOSINOPHILIA, Pleural effusion, *Wuchereria bancrofti*

Introduction

Filariasis is a very common vector-borne disease in tropical countries like India. It is a major health problem in India and endemic along the sea costs and river banks. Clinical manifestations of filariasis range from asymptomatic microfilariasis to acute manifestations such as fever, epididymo-orchitis, lymphangitis, lymphadenitis, or chronic symptoms such as hydrocele, lymphedema, elephantiasis, and topical pulmonary eosinophilia. Microfilaria in peripheral blood examination is frequent in filarial-endemic regions both in symptomatic or asymptomatic cases. However, the presence of microfilaria in pleural fluid cytology is very rare finding even in endemic areas. Few cases have been reported in association with malignant pleural effusion. However, pleural effusion of filarial origin is extremely rare manifestation. In the present case, we are reporting a classical case of microfilaria in pleural fluid cytology.

Case Report

A 46-year-old Hindu male presented to outpatient department with complaints of difficulty in breathing with chest pain that gradually developed over 6 months. The chest discomfort was associated with low-grade fever and occasional pyrexial spikes. The symptoms have worsened in the past 1 month that bothered him to present at health-care facility. He is a farmer by profession and has no addiction. He has a past medical history of pulmonary tuberculosis (TB), for which he took DOTS category-1 antitubercular treatment for 9 months about 10 years back and was cured. At present, he is diabetic for the past 4 years, maintained on glimepiride-metformin (OHA).

On general examination, he had mild pallor and icterus with stable vitals. On respiratory examination, the breath sound was diminished in the right upper, middle and lower zone with tracheal shift to left side. There was stony dull percussion note present over the right side of chest. The examination over the left side was within normal limits except for occasional crackles at left basal region. The examination of other systems was within normal limits. The skin was dry, and on further questioning, the patient admitted

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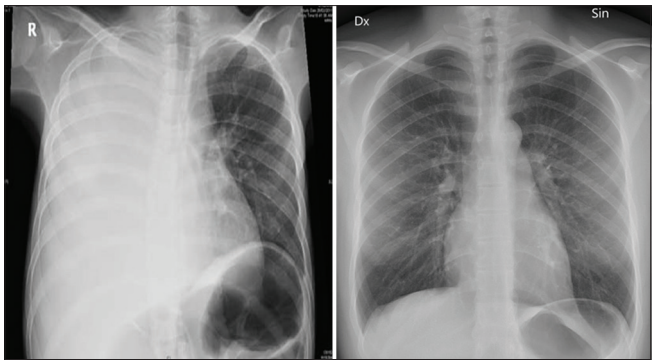

Figure 1: The X-ray chest posteroanterior view at presentation and 6 months following therapy

to having frequent cough and cold in past with occasional acute shortness of breath.

The PA chest X-ray revealed right-sided pleural effusion with the obliteration of costophrenic angle [Figure 1]. The complete blood count (CBC) showed hemoglobin (Hb) 8.9 g% (normocytic–normochromic) and total white blood cells (WBC) 16,700 cells/cumm with eosinophil 31.2% and absolute eosinophil count 2800 cells/µl. The liver function test had serum bilirubin 2.1 mg% (direct = indirect) with raised Gamma-glutamyltransferase and alkaline phosphatase level test and normal transaminase level. The rest of the blood-biochemical parameters were within normal limits. The routine and microscopic examination of urine was normal.

A right-sided thoracentesis was performed, and a hazy, reddish colored pleural fluid was obtained. Routine biochemical parameters of the fluid revealed it to be exudative with pleural fluid protein 3.34 g and lactic acid dehydrogenase (LDH) 150 IU/L. The carcinoembryonic antigen and adenosine deaminase levels were within normal limits. Stain for acid-fast bacillus and cartridge-based nucleic acid amplification test was negative as well. No organism could be cultured. The microscopic examination of the centrifuged debris strikingly showed microfilariae of *Wuchereria bancrofti*. There was plenty of eosinophil and macrophages with 6% reactive mesothelial cells in the film without any abnormal/malignant cells [Figure 2].

A diagnosis of filarial pleural effusion was made, and he was started on albendazole-ivermectin, diethylcarbamazine (DEC), and levocetirizine. Over 14 days of therapy, the patient had marked improvement in his symptoms, became afebrile, and started feeling better. The repeat CBC showed Hb 8.9 g% (microcytic–hypochromic) and WBC 1189 cells/cumm with eosinophil – 24%. The liver profile also improved. He was maintained on the therapy for 6 months, and after 6 months, he had complete resolution of his effusion [Figure 1], where CBC revealed Hb 12.8 g% (normocytic-normochromic) and WBC 6734 cells/cumm with eosinophil – 8%. He has been withdrawn from the medications and is doing well.

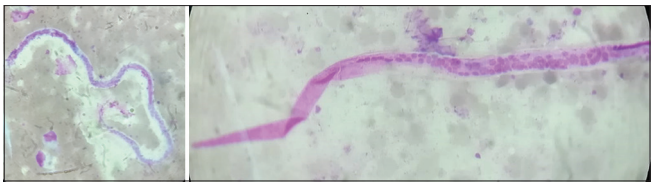

Figure 2: Demonstration of microfilariae of *Wuchereria bancrofti* in smear of centrifuged sediment of pleural fluid under ×40 M/E

Discussion

In tropical countries like India, filariasis is a very common vector-borne disease.[1,2] In India, it is a major public health problem and is endemic along the sea coasts and river banks.[2,3] *W. bancrofti* is the most common species identified.[4,5] Clinical spectrum of filariasis ranges from asymptomatic microfilariasis. It may cause acute manifestations such as fever, epididymo-orchitis, lymphangitis, lymphadenitis, or chronic symptoms such as hydrocele, lymphedema, elephantiasis, and topical pulmonary eosinophilia.[3,6] Microfilaria in peripheral blood smear is common in filarial-endemic regions, whether the patient is symptomatic or not.

Microfilaria is occasionally found in cytology smears, lymph node aspirate, superficial skin nodules, breast mass, and hydrocele fluid-containing microfilaria are infrequently reported.[2,4,5] Occasionally, microfilaria in association with malignant lesions has been documented.[2,4] There are many infective etiologies of pleural effusion, but the presence of microfilaria in pleural fluid cytology is very rare finding.[2,4,6] The above-reported case is an incidental finding of microfilaria in pleural fluid cytology.

In India, TB is the most common case of pleural effusion. Exudative pleural effusion with lymphocyte predominance is characteristic of tubercular origin. Cytological evaluation helps to identify the pleural pathology. The demonstration of characteristically stained cells or organisms is indispensable.

Filarial pleural effusion occurs either directly due to filarial lymphatic-chylous effusion lymphangitis and incomplete lymphatic obstruction or through immunological reaction against filarial antigen.[4,6] Filarial pleural effusion can be chylous or nonchylous in nature. Chylous effusion occurs due to the rupture of chyle from obstructed thoracic duct.[5] Nonchylous effusion is supposed to be coincidental finding in the presence of microfilaria in pleural effusion. Most of the previously reported cases in literature has shown the presence of *W. bancrofti* species.[1,5] Similarly, in our case, pleural effusion was nonchylous exudative type and microfilariae of *W. bancrofti*. Exudative pleural effusion in such case can be explained by lymphangitis due to incomplete obstruction of pulmonary lymphatics.

Resolution of effusion after DEC therapy provides strong evidence of the causation of pleural effusion primarily of filarial origin.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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