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Microfilariae in an encysted pleural haemothorax: A rare case report

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Abstract

Filarial infection in India is endemic. The parasite has been identified in different kinds of cytologic specimens of which few cases of pleural effusions with microfilariae have been reported. We report a case of a 71 year old man presenting with chest pain and breathlessness showing an encysted pleural effusion on imaging studies. On aspiration of this effusion the fluid was hemorrhagic and the smears studied showed microfilariae. Microfilariae were not found in the peripheral blood. The patient had a mild peripheral eosinophilia and circulating filarial antigen test was positive. Our case shows that filariasis can be seen within a haemothorax and should be kept in mind while screening hemorrhagic effusions.

Keywords: Microfilariae, pleural effusion, haemothorax

Introduction

Filariasis is a common parasitic disease in India. Filariasis is endemic in 17 States and six Union Territories, with about 553 million people at risk of infection ^[1]. Microfilariae have been detected in many different types of cytology specimens. Though microfilariae have been detected in chylous pleural effusions their presence in hemorrhagic pleural effusions is rare.

Case Report

A 71 year old male presented in the emergency department with chest pain since 10-15 days, breathlessness, generalized body weakness and burning micturition. He was a known case of type 2 diabetes mellitus, hypertension and chronic renal disease on dialysis. On admission his hemoglobin was 8.5 g/dl, white blood cell count 5800 cells/ μ l, platelet count 192,000/ μ l, differential leucocyte count was 69% neutrophils, 8% eosinophils, 17% lymphocytes and 6% monocytes. His creatinine levels were elevated at 4.17 mg/dl, Blood urea nitrogen 49 mg/dl, sodium 131mmol/l, potassium 5.24mmol/l, Troponin T-HS 31 pg/ml and CKMB level was 20.1 U/l.

High resolution computed tomography (HRCT) chest revealed multiple centrilobular nodules in both the lungs with tree in bud appearance at places. Interlobular septal thickening was seen in both the lungs. An encysted pleural collection in left lower zone, posteriorly with heterogenous attenuation and calcific foci was seen. It measured 6.6x12.4x11.9 cm in size. Passive partial collapse of left lower lobe was seen with calcific foci. The overall impression give on HRCT was that of an encysted pleural collection- ? chronic haemothorax, hydrostatic edema with active chest infection.

An ultrasound guided aspiration of the encysted pleural effusion was done. 3 ml of haemorrhagic fluid was obtained. Smears were prepared and the remaining fluid was sent for microbiological tests. The sample clotted very quickly therefore biochemical tests could not be performed. Cytological examination of the May Grunwald Giemsa stained smears revealed microfilariae of *Wuchereria bancrofti* against a hemorrhagic background along with neutrophils and few eosinophils. Aerobic culture, polymerase chain reaction (PCR) and culture for Tuberculosis were performed on the remaining fluid which did not show positive results. The patient's peripheral blood was examined for microfilariae, however, they were not detected. Rapid Filaria Antigen testing was done which turned out to be positive. Filarial

IgG levels were detected but IgM levels were not detected. Bronchoalveolar lavage fluid did not show any microfilariae.

The patient was started on diethyl carbamazine (DEC), 100 mg twice a day along with doxycycline 100 mg twice a day. The patient showed improvement with this treatment.

Discussion

Filarial parasites are thread like worms which are found mainly in the lymphatic and circulatory systems, but can also be found in muscles, connective tissue and serous cavities [2]. Lymphatic filariasis caused by *Wuchereria bancrofti* and *Brugia malayi* is an important public health problem in India. The Government of India has accorded a high priority for elimination of this infection through mass chemotherapy programme (annual, single dose of Diethylcarbamazine citrate, i.e. DEC - 6 mg/kg of bodyweight, plus Albendazole repeated four to six times) [1]. Apart from peripheral blood, *Microfilaria* can be found in aspirated material from lymph nodes, breast lump, cutaneous swellings, cervicovaginal smears, effusions, urine, bronchial washings and ovarian cyst fluid [3, 4]. Detection of microfilariae in pleural effusions is not a common finding. Jyotima *et al.* [5] detected microfilariae in straw coloured pleural effusion of a case previously treated as tuberculosis. Microfilariae were not detected in the peripheral blood of this patient. Shukla *et al.* detected microfilariae in the pleural fluid of a 58 year old man who presented with left side chest pain and breathlessness. This patient did not have a peripheral blood eosinophilia [6]. A case of metastatic adenocarcinoma in the pleural cavity with coexistent microfilaria in the pleural effusion was reported by SK Singh *et al.* [7]. The pleural effusion in this case was hemorrhagic.

Our case was that of a 71 year old man who presented with breathlessness and chest pain. A mild peripheral blood eosinophilia was seen. The pleural effusion was hemorrhagic and on further investigation was sterile on aerobic culture. Microscopic examination of the smears revealed microfilariae of *Wuchereria Bancrofti*. Investigations for tuberculosis did not yield positive results. The bronchoalveolar lavage fluid did not show the presence of eosinophils or microfilariae. More importantly the peripheral blood did not show the presence of microfilariae.

At present three laboratory methods are used to diagnose active infections with *Wuchereria bancrofti*. They are detecting microfilariae in night blood specimens, detecting circulating filarial antigens released in the blood by adult worms and detection of filarial DNA in blood by PCR. Antigen testing is most widely used at this time because it is more sensitive and convenient for detecting infection than microfilaria testing or PCR [8]. The circulating filarial antigen (CFA) test is regarded as a "gold standard" by World Health Organisation for diagnosis of lymphatic filariasis. In addition antigen level remains stable during the day and night, so these tests can be performed at any time. CFA has been found to be 94% to 100% sensitive and 90% to 100% specific [9]. In the absence of evidence of presence of microfilariae in the peripheral blood of the patient the detection of CFA in this patient only served to strengthen the diagnosis.

Patients with Filariasis (in the absence of onchocerciasis or loiasis) should receive treatment with DEC (6 mg/kg daily

for 12 days), regardless of whether clinical symptoms or microfilaria are present. Reversal of early lymphatic damage has been observed following DEC treatment. Evidences suggest that addition of doxycycline (200 mg/day for four to six weeks) also reduces pathology in mild to moderate disease [9].

The most common causes of spontaneous hemothorax are pneumothorax, coagulopathy, vascular causes and neoplasia [10]. Our patient was a known case of chronic renal disease on dialysis. The cause of his chronic encysted hemothorax is not known. Neoplasia, aerobic and tubercular infections were ruled out with investigations. Of all the cases reported so far of filariasis in pleural effusions only one case had a hemorrhagic effusion with a coexistent malignancy [7].

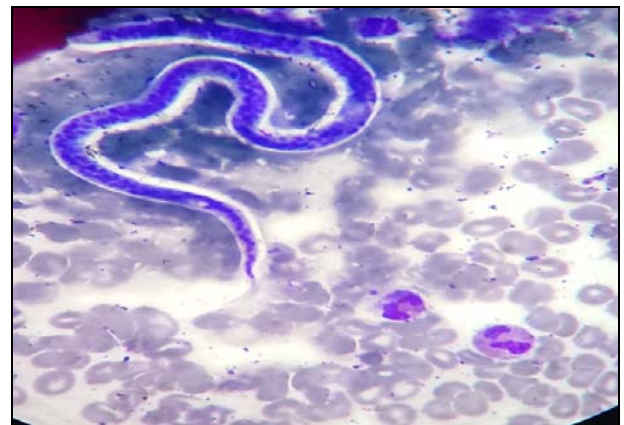


Fig 1: MGG STAIN, x100: Microfilariae of *Wuchereria bancrofti*.



Fig 2: Axial CT section through lower chest shows an encysted pleural collection in left lower zone posteriorly with heterogeneous attenuation.

Conclusion

In a tropical country like India the possibility of filariasis in a pleural effusion should be kept in mind even in a case of hemothorax.

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