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Case Report

Microfilarae in malignant mesothelioma associated pleural effusion with blood microfilaremia: a rare association

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ABSTRACT

Background: Filariasis has a wide spectrum of presentation and usually involves the lung in the form of tropical pulmonary eosinophilia with pulmonary infiltrates and peripheral eosinophilia. Filariasis presenting with pleural effusion is an unusual presentation. Malignancy in association with filarial pleural effusion is extremely rare. In this context, we hereby report a case of 45 year old male who presented with right sided chest pain, cough, fever and generalized weakness. Pleural fluid cytology revealed microfilaria and pleural biopsies from pleural nodules confirmed malignant mesothelioma. Peripheral blood smears taken at night exhibited microfilaria with normal eosinophil counts, which is further uncommon. Role of filariasis in tumorigenesis is controversial.

Keywords: Effusion, Filariasis, *Mesothelioma*, *Microfilariae*, Pleural.

INTRODUCTION

Filariasis is a vector-born disease and endemic in tropical countries like India.[1,2] *Wuchereria bancrofti* is the most widespread of the filarial organisms, infecting humans in 90 percent of cases.[3] Filaria involves lymphatic system with a predilection for lower limbs, retroperitoneal tissue, spermatic cord and epididymis.[4] Microfilariae are not just confined to the lymphatic system but may be associated with other organs, subcutaneous tissues and serous cavities like pleura and pericardium.[5] Filarial pleural effusion is an uncommon presentation. A case of rare coexistence of microfilariae in pleural effusion with association of malignant mesothelioma and blood microfilaraemia without eosinophilia is being reported.

CASE REPORT

A 45 years old male, chronic smoker and resident of West Bengal presented with a history of chest pain and cough for last two months and low-grade fever at night for last fifteen days. Chest pain was non-radiating, located in the infra-scapular region of right side of the chest and increased on deep inspiration. Cough was dry and more in the night during sleep. There was no history of tuberculosis in the past. He was a steel plant worker and employed for last twenty years in dust prone area, where iron ore was processed and handled. Examination of the patient revealed average built, no pallor, cyanosis, icterus and clubbing. He was mildly breathless at rest. Respiratory system examination and x-ray confirmed

right sided pleural effusion. Other system examinations were not contributory (Figure 1).

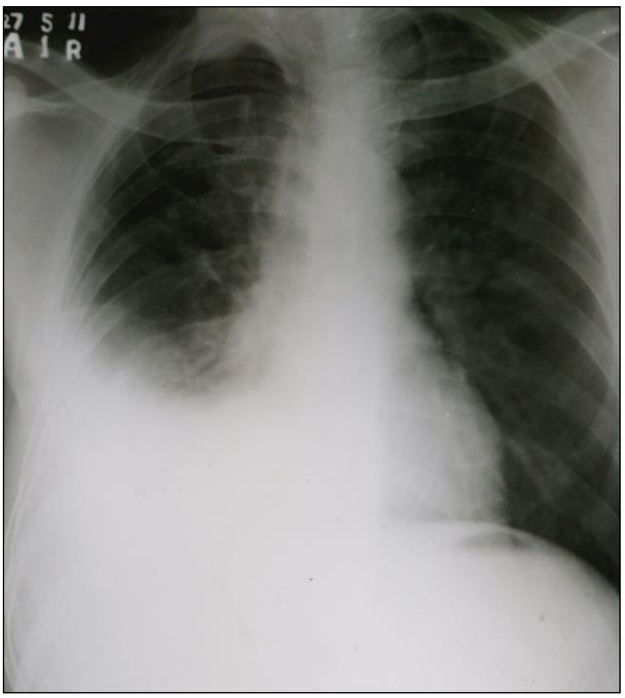

Figure 1: Chest X-ray of right sided pleural effusion.

Haematological investigations revealed haemoglobin of 11.2 gm%, total blood count was slightly raised (14000/cu.mm) and differential leucocyte counts were within normal range.

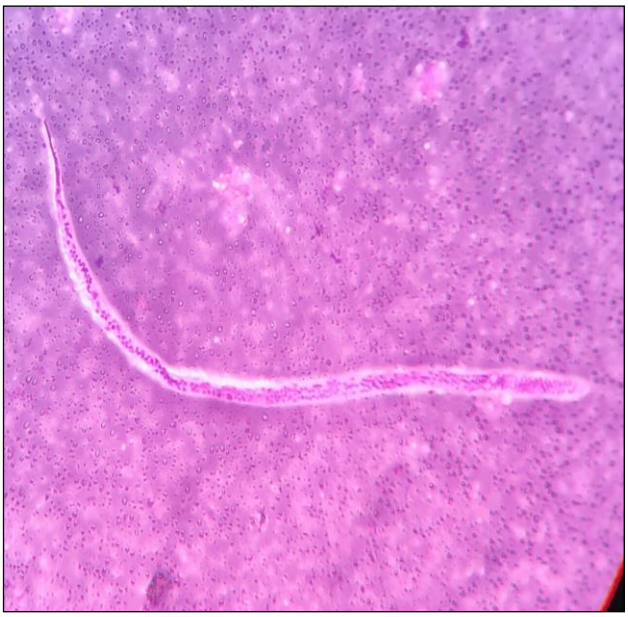

Figure 2: Peripheral blood smear film (100X) demonstrated *Wuchereria bancrofti* microfilaria.

There was no eosinophilia. General blood picture demonstrated normocytic and hypochromic RBCs with few microcytes and macrocytes. Neutrophils were having normal morphology with raised count and platelets were adequate in blood smears. Night-time peripheral blood smear samples detected microfilariae (Figure 2).

Cytological investigations of pleurocentesis fluid showed straw coloured fluid with 250 cells/cu mm out of which 95% were lymphocytes and 5% polymorphs along with plenty of large degenerated macrophages and microfilariae (Figure 3).

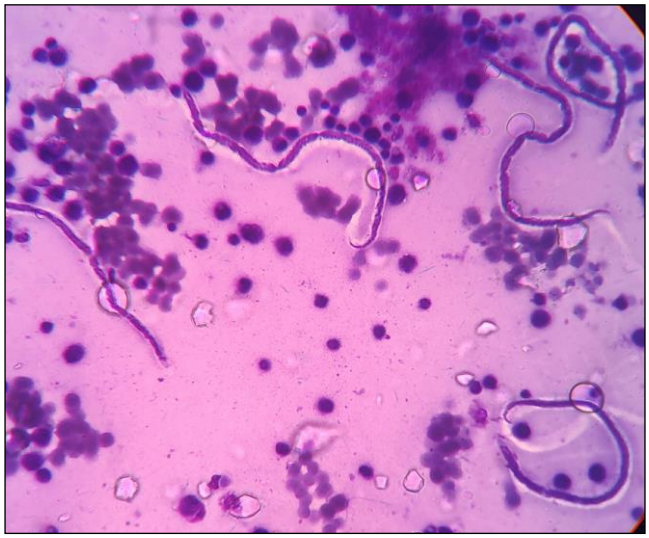

Figure 3: Pleural fluid smear film (40X) demonstrated multiple *Wuchereria bancrofti microfilariae.*

Biochemical analyses of pleural fluid revealed glucose-107 mg/dl, proteins- 4.3 gm/dl, LDH- 324 U/L and ADA-11.2 U/L. Pleural fluid cultures did not demonstrate growth of Mycobacterium spp. by L-J and MGIT automation method. Blood antigen test for filarial antigen confirmed the presence of bancroftian species. Ultrasonography of abdomen and chest detected cystic lesion measuring 2.6x1.5 cm in segment VI of liver with moderate pleural effusion with internal echoes. Patient was advised Diethylcarbamazine (DEC) in the daily dose of 300 mg (6 mg/kg) along with single dose of tab. Albendazole 400 mg. after pleural aspiration of about 1000ml of pleural fluid. The patient was discharged on tab. DEC for 3 weeks with follow up advice. At the time of discharge, the patient was comfortable but about one and a half month later suddenly presented with severe dyspnoea. Clinical examination and x-ray confirmed massive pleural effusion in right side of chest again. Pleural fluid aspiration relieved the patient. Thereafter he was further evaluated. Pleural fluid cytological examination did not reveal any microfilaria during this time. CT- thorax findings showed pleural effusion with atelectasis of right lower lobe and pleural based enhancing soft tissue density lesions also seen along the diaphragmatic and mediastinal pleura. There was no evidence of calcification, necrosis, destruction and invasion within the chest wall. There was no significant hilar or mediastinal adenopathy seen in the scan (Figure 4A and 4B).

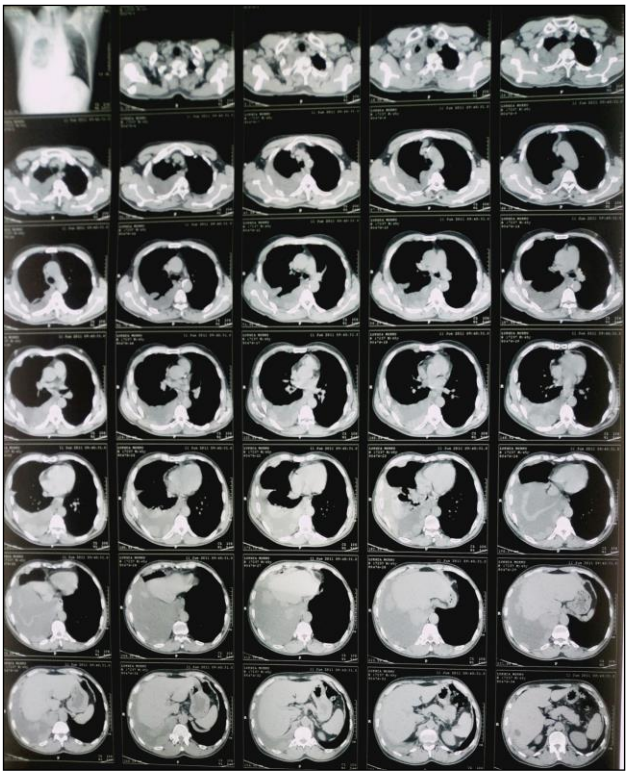

Figure 4 A): CT Scan thorax showing right sided moderate pl. effusion.

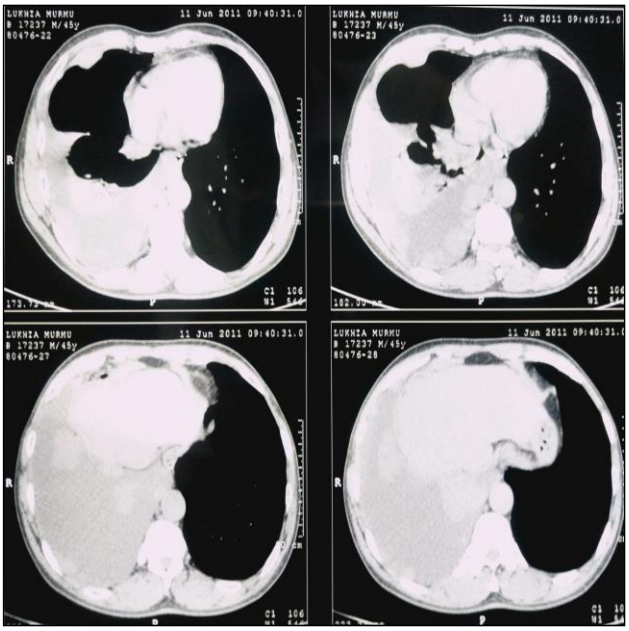

Figure 4 B): CT Scan showing pleural lesions as enhancing soft tissue densities along the diaphragmatic and mediastinal pleura.

Thoracoscopy was performed which revealed soft tissue pleural lesions, out of which the largest measured 62x44 mm in the medial aspect of the diaphragmatic pleura and another soft tissue lesion of size 24x26 mm in the anterior mediastinum. There were likely to be mediastinal pleural deposits. Pleural biopsies from these pleural nodules revealed malignant neoplasm and immune-histochemical features favored mesothelioma (Figure 5). Metabolically active foci in ribs and left iliac crest in PET-CT confirmed distant osseous metastasis. Palliative chemotherapy was planned after ICD placement and pleurodesis due to advanced nature of disease. Patient and relatives were explained about the prognosis, limited treatment options, cost benefits and risks of proposed treatment. He was given Inj. pemetrexed 500 mg/m2 and Inj. cisplatin 75mg/m2 on day-1 and Inj. Granulocyte colony- stimulating factor (G-CSF) 6mg. subcutaneous on day-2. He received 4 cycles of chemotherapy at an interval of 4-5 weeks with supportive medication, but patient did not improve. Unfortunately, patient gradually deteriorated and succumbed to death within nine months after starting treatment.

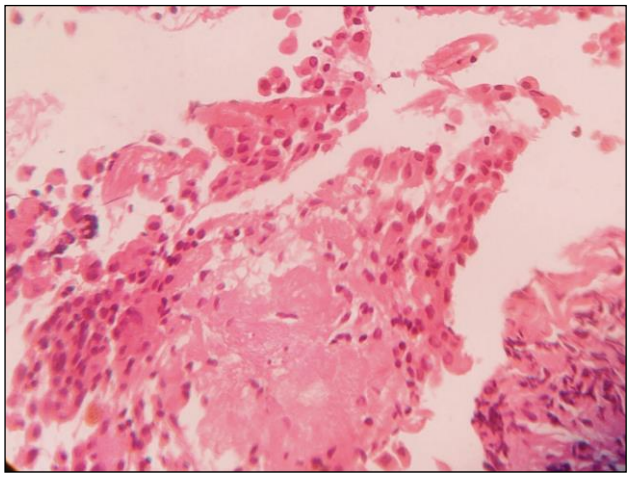

Figure 5: Mesothelioma cells (Epitheloid cells with prominent nuclei).

DISCUSSION

Tropical diseases are always endemic in the region of Asian and African countries.[4] Currently, more than 1.4 billion people in 73 countries are at risk and over 120 million people are currently infected, with about 40 million disfigured and incapacitated by the disease.[6] This was a rare coexistence of microfilaria in pleural effusion with malignant mesothelioma. In this case, the patient did not come with usual features of filariasis. Rather the patient presented with moderate, nonchylous pleural effusion primarily suggestive of tuberculosis which is the most common cause of pleural effusion in India.[7,8] The presence of microfilariae in pleural fluid was an incidental finding. The diagnosis of bancroftian spp. of microfilaria was made on the basis of blood antigen test. The subsequent search for microfilaria in blood in night sample revealed microfilaria with normal eosinophil counts. Microfilaria probably appears in tissue fluids and exfoliated surface material due to lymphatic obstruction. The host immune response directed against the parasite lying in different lymphatic vessels appears to be the

major factor in determining the clinical presentation. The immune response due to embryonal, larval and adult worm antigen is known. Exudative effusion in these cases may be due to lymphangitis and incomplete obstruction of lymphatics or atypical hypersensitivity reaction.[2]

The diagnosis of coexisting malignancy was missed in first instance because in India, most common cause of non-haemorrhagic exudative pleural effusion is tuberculosis. Subsequently, after reviewing the medical literatures and after medical searches it was learnt that microfilaria has also been observed as coincidental findings with primary malignant tumors, metastatic deposits and other inflammatory conditions. Entry of microfilaria in pleural space is still a speculation.

Most of the authors have explained that as microfilaria circulate in vasculature and lymphatic system and whenever the neoplastic lesion causes vascular or lymphatic obstruction, they appear in tissue fluid. In malignancy increased vasculature also causes increased deposit of microfilaria in these sites.[10] This explains the association of microfilaria in malignant pleural effusion, but the presence of microfilaria makes no change in clinical presentation of the neoplastic process.[11] Filariasis can be cured by Diethylcarbamazine (DEC) and in this case, the pleural effusion of the patient did not improve on administration of DEC because of association of malignant mesothelioma which was the cause of effusion.[12]

CONCLUSION

The case report is a rare co-existence of microfilariae in pleural effusion associated with mesothelioma. Though tuberculosis and malignancy are common causes of pleural effusion, the presence of microfilariae in pleural effusion should also be kept as rare possibility in parts of countries where filariasis is endemic. This rationale for coexistence remains unanswered till more work proves this association.

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