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Bone marrow filariasis presenting as aplastic anemia: A case report

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ABSTRACT

We present a case of a 40-year old male who presented with complaints of generalized weakness, lethargy, breathlessness on exertion, easy fatigability for a 2-month duration. He also had the history of mild bleeding from gums and nose since 2 days ago and had pallor on general physical examination. The peripheral smear revealed pancytopenia with several microfilariae in the buffy coat. Bone marrow aspiration showed hypocellular marrow with microfilariasis and increase in mature plasma cells. The patient was starting on diethylcarbamazine. However, his bone marrow aspirate done 2 weeks later showed hypocellular marrow with no parasites and biopsy showed picture that was suggestive of aplastic anemia. He was later referred to higher center for further investigation and management. Pancytopenia as a presenting feature of filariasis is rare, but a few case reports have been published. Yet a causal relationship of filariasis and pancytopenia, hypoplasia or aplasia of bone marrow has not been determined. It has also not been proved that a treatment of filariasis has led to a reversal of bone marrow hypoplasia or aplasia.

1. Introduction

Lymphatic filariasis is a major public health problem in the endemic areas of India. Apart from the blood and the lymph node aspirates, microfilariae have been demonstrated in the fine needle aspiration cytology smears from various sites like the thyroid, breast and subcutaneous nodules. It is found rarely in cervical scrapes and in bronchial washings, and very rarely in fluids like ascites and vaginal secretions. Cases of filariasis infiltrating the bone marrow are rare and cases leading to bone marrow suppression are all the more rare. A few cases have been reported in the literature in association with various hematological findings, such as peripheral blood cytopenias, bone marrow hypoplasia, megaloblastic anemia and leukemia.

2. Case report

The patient is a 40-year old male, currently residing in Delhi but originally belonging to the state of Bihar, India. He presented to us with complaints of generalized weakness, lethargy, breathlessness on moderate exertion, easy fatigability for a 2-month duration. He also had the history of mild bleeding from gums and nose since 2 days ago. He had no history of fever, swelling of any limbs or scrotum, rashes, skin hypo- or hyper-pigmentation, joint or abdominal pains. He did give a past history of filariasis diagnosed 2 years back in his hometown, where it was endemic, for which he took irregular treatment. There was no other significant past or family history.

On examination, his pulse was 104 beats per minute, blood pressure was 110/70 mmHg and the respiratory rate was 26 breaths per minutes. General physical examination revealed pallor without clubbing, icterus, cyanosis, pedal edema, raised jugular venous pressure, lymphadenopathy, rashes, pigmentation, petechiae, or purpura. Systemic examination did not reveal any organomegaly, cardiac murmur, or crepitation on chest auscultation.

His peripheral blood revealed pancytopenia (hemoglobin 8.9 g/dL, total leukocyte count 2 200/mm^3, and platelet 20 000/mm^3). Peripheral smear showed normocytes, few microcytes and normochromic red blood cell morphology. Kidney and liver function test were within normal range with normal coagulation studies. Total red blood cell count was 2.57 × 10^{12}/L, packed cell volume

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24%, mean corpuscular volume 70 fL, corrected reticulocyte count 0.5%, and serum lactate dehydrogenase 352 IU/L. His HIV, anti-hepatitis C virus and hepatitis B surface antigen were non-reactive. Ultrasound abdomen revealed stones in gall bladder. Bone marrow aspiration showed hypocellular marrow with microfilariasis with pancytopenia and increase in mature plasma cells along with several microfilariae in the buffy coat of peripheral smear (Figure 1). Bone marrow aspiration done 2 weeks later showed hypocellular marrow with no parasites and biopsy showed picture that was suggestive of aplastic anemia.

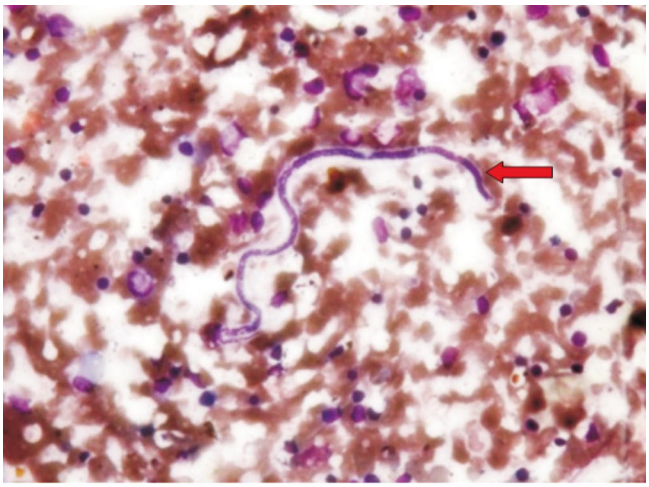

Figure 1. Moderately cellular bone marrow aspiration smear showing microfilaria (arrow) with interspersed scattered lymphocytes, maturing myeloid forms, few normoblastic erythroid cells and plasma cells (Giemsa stain, 200× amplification).

The patient was starting on albendazole and diethylcarbamazine for 21 days and was transfused with platelets and packed red cells for his pancytopenia but there was not much improvement after 2 weeks. He was referred to higher center for further investigation and treatment of aplastic anemia.

3. Discussion

Filariasis is one of the major public health hazards among Indian population. The common presentations are asymptomatic microfilaremia, acute adenolymphangitis, hydrocele and chronic lymphatic disease. It is believed that the 3rd stage larvae settle in lymph nodes become mature in about 5–18 months and move into thoracic duct, venous system, pulmonary capillaries and then into peripheral circulation. These may then enter organs supplied by circulation, including the bone marrow.

There have been a few studies documenting filariasis at atypical sites using fine needle aspiration cytology[1]. In one study, filariasis was detected at subcutaneous swellings, breast, thyroid, lymph nodes, effusions, cervical scrape, eyeball, sputum and bronchial washing[2]. In all these cases, filariasis was not even considered as a differential diagnosis.

There are very few reported cases of pancytopenia, hypoplastic or aplastic anemia as a presenting feature of filariasis[3-6]. Whether filariasis is the cause of bone marrow suppression or an incidental finding is still not fully understood. Thus, any patient with pancytopenia with microfilariasis should be evaluated with bone marrow biopsy to rule out aplastic anemia.

An association of acute lymphoblastic leukemia and filariasis has been reported in literature but the author concluded that it is possible that the immunocompromised status of the patient due to leukaemia had made the patient more susceptible for filarial infection[7]. In another case report, microfilaria was detected in bone marrow of a patient with multiple myeloma. As previously stated, it needs further investigation about whether this was a chance finding or causative association. However, the authors concluded that it was a chance finding[8].

Any patient with pancytopenia in endemic region should also be evaluated with bone marrow aspiration for microfilariasis. Bone marrow filariasis can present as hypoplastic or aplastic anemia. Microfilariasis can also be seen in atypical sites like subcutaneous swellings, breast, thyroid, lymph nodes, effusions, cervical scrape, eyeball, sputum and bronchial washing. Further investigations are needed to understand the possible etiological role of filariasis in various hematological manifestations such as pancytopenia, hypoplastic or aplastic anemia.

Conflict of interest statement

We declare that we have no conflict of interest.

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