International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 12, December 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.12.2024.56

CASE SERIES

A Potpourri of Unusual Manifestations by Microfilaria: A Case Series

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Received Date: 22 October, 2024 Accepted Date: 25 November, 2024

ABSTRACT
Filariasis is a parasitic disease endemic in tropical and subtropical countries of the world especially in India. It is caused by a parasite WuchereriaBancrofti. Wuchereriabancrofti is a filarial nematode transmitted by the female Culex mosquito. In the present study, all the patients as well as the donor did not have any classical conventional features of lymphoedema or elephantiasis

This interesting study is a compilation of six interesting cases to document that a very commonly prevalent parasite can also have such an unusual clinical, biochemical and haematological manifestations and that a pathologist and physicians should always be ready for accidental educational surprises while managing a patient.

Key words: Microfilaria, Unusual manifestations, Filariasis

INTRODUCTION
Filariasis is a parasitic disease endemic in tropical and subtropical countries of the world especially in India. [1,2] It is caused by a parasite WuchereriaBancrofti. Wuchereriabancrofti is a filarial nematode transmitted by the female Culex mosquito. [1,3,4] Two types of filarial infection occur in India- Wuchereriabancrofti and Brugiamalayi, Bancroftian filariasis is responsible for 98% of infection. [5]

This interesting study is a compilation to document that a very commonly prevalent parasite can also have such an unusual clinical manifestation and that a pathologist and physicians should always be ready for accidental educational surprises while managing a patient.

CASE SERIES
Case 1: A 70-year male patient presented in emergency with complaints of intermittent fever, black loose stools and decreased appetite in the last 20 days. His haemogram showed Hemoglobin 9.6 g/dl, Total Leucocyte Count 1500/cumm, Differential Leucocyte Count 23% Neutrophils, 60% Lymphocytes, 06% Monocytes, 01% Eosinophil. RBC count 2.82 million/cumm, Hematocrit 27.2%, MCV 90.9 fl, MCH 34.0 pg, Manual Platelet Count 0.67 lakh/cumm, Retic count 0.2%. Prothrombin Time: 11.3, BP 130/70 mm of Hg, Pulse rate 68/min, SpO2 98%, he was non-reactive for HIV, HBsAg, HCV, Malaria and Typhi Dot. Total protein 6.04 g/dl, Albumin 1.2 g/dl, Bilirubin 53 mg/dl with direct bilirubin 27 mg/dl and indirect bilirubin 26 mg/dl, SGOT 87 U/l, SGPT 40 U/l. His urea and creatinine were normal. Dengue NS1 showed positive test result. On peripheral smear examination impression was given as Pancytopenia with microfilaria [Figure 1]. Eosinophilia was not seen. Patient was having dimorphic anemia showing microcytic hypochromic and macrocytic RBCs. There was predominance of small lymphocytic population (also in subsequent CBCs) with polymorphs showing mild degree of toxic granulation. Subsequent CBCs showed gradual decrease in platelet counts with final count <20000/cumm. Bone marrow seemed cellular for age (70 years) and showed micronormoblastic erythroid hyperplasia along with megaloblastoid differentiation. Lymphoid cells and plasma cells were increased with numerous microfilariae [Figure 2]. This nematode showed transparent, hyaline sheathed cylindrical body with central column of nuclei terminating shortly before the tail end giving it an empty look. Stool for occult blood was positive. However, the patient was not responding to haematinics as well as DES. Despite treatment patient was deteriorating. Finally, in view of peripheral smear and bone marrow findings, aplastic

DOI: 10.69605/ijlbpr_13.12.2024.56

anaemia was thought of as a possibility. Patient was referred.

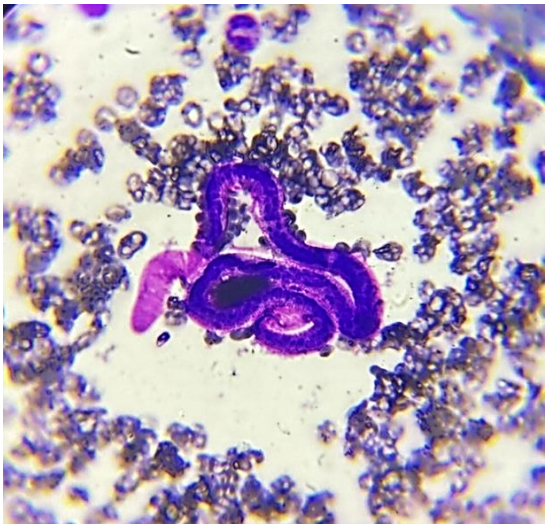

Figure 1:Microfilaria on Peripheral Smear Examination (40x View)

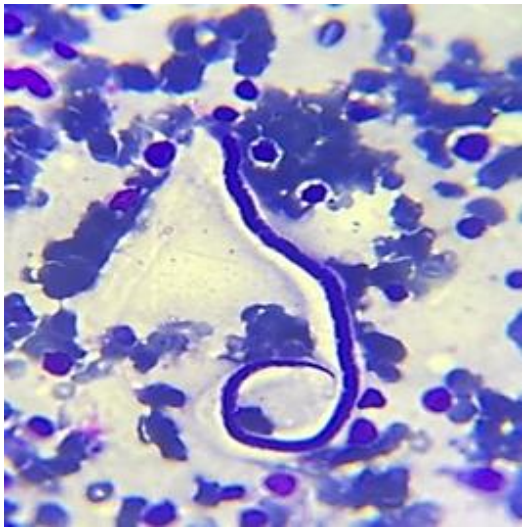

Figure 2: Microfilaria on Bone Marrow Aspiration Smear (40x View)

Case 2: A 44-year male patient presented in emergency with complaints of vomiting after every meal for past 1 week, fever for past 5-6 days, and abdominal pain for past 3-4 days. His haemogram showed Hemoglobin 11.2 g/dl, Total Leucocyte Count 3600/cumm, Differential Leucocyte Count 21% Neutrophils, 53% Lymphocytes, 13% Monocytes, 13% Eosinophils. RBC count 3.63 million/cumm, Haematocrit 33.6, MCV 87.2fl, MCH 30.9 pg, Manual Platelet Count 0.30 lakh/cumm, Prothrombin Time 9.5 sec, SGOT 185U/l, SGPT 64U/l, Bilirubin, Urea and Creatinine were normal. He was non-reactive for HIV, HBsAg, HCV, Malaria and Typhi Dot. On per Abdomen examination there was tenderness over the umbilical region. On peripheral smear examination impression was given as Pancytopenia (Normocytic Normochromic Anaemia with leukopenia, neutropenia and thrombocytopenia) with microfilaria. Stool for occult blood was negative. Eosinophilia was seen. Dengue NS1 showed positive test result. Bone Marrow Aspirate showed normocellular marrow and numerous microfilaria larvae.

Case 3: A 24-year male patient presented in orthopaedic OPD with fracture acetabulum and posterior hip dislocation. Patient required blood transfusion. So, after major and minor cross match as well as screening the blood for five approved transfusion transmitted infectious diseases blood transfusion was given. After 30 minutes of transfusion patient started complaining of breathlessness and pruritis all over body. Transfusion was stopped immediately. Routine protocol for transfusion reactions was followed. Recipient had no history of fever or any previous allergic reaction. Pre and post transfusion complete blood count was similar.
Hemogram showed Haemoglobin 10.5 g/dl, Total Leucocyte Count 5600/cumm, Differential Leucocyte Count 70% Neutrophils, 25% Lymphocytes, 04% Monocytes, 01% Eosinophils. RBC count 3.86 million/cumm, Haematocrit 32.8, MCV 85.0fl, MCH 27.1pg, Platelet Count 2.53 lakh/cumm, Eosinophilia was again not seen in the patient (recipient). Additional tests for ABO/O phenotyping, antibody screening, cross matching, bilirubin, haptoglobin, urine haemoglobin, urine urobilinogen and inspection of donor unit were also done as a part of Transfusion reaction Investigation. Apart from Routine slides, thick smear and wet mounted slide was also prepared and observed under the microscope. Finding of a live and moving microfilaria larvae seen on wet mount was a eureka moment [Figure 3]. In thick smear, dead microfilaria larvae were seen.

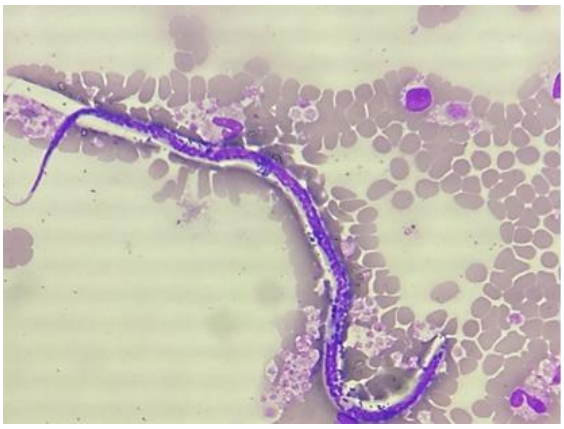

Figure 3: Microfilaria on Peripheral Smear Examination (40x View)

Case 4: A 40-year-old female was admitted with acute pain abdomen and fever for 1 week. On routine investigation, his complete blood count showed haemoglobin within range 12.2g%, Total Leucocyte Count was slightly raised (12,000/cumm) with lymphocytosis and monocytosis (Differential

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Leucocyte Count 23% Neutrophils, 53% Lymphocytes, 22% Monocytes, 02% Eosinophils and low platelet count (0.75 lakh/cumm). He was non-reactive for HIV, HBsAg, HCV, Malaria, NS1 and Typhi Dot. Total protein, albumin, SGOT and SGPT were normal. His Bilirubin was 2.5 mg/dl with direct bilirubin 1.8 mg/dl and indirect bilirubin 1.3 mg/dl, Alkaline phosphatase was raised 450 U/l. CRP was raised (12 mg/l). Urea and creatinine were normal. On peripheral smear examination, a small clump of microfilaria larvae was observed under the microscope with motile microfilaria on wet mounted preparation. Eosinophilia was absent. It was an unexpected case of filariasis with non-specific haematological and biochemical findings.

Case 5: It was a case of young male with complaints of fever, headache, vomiting and burning micturition. His urine examination was positive for leucocyte esterase and nitrite with 15-20/HPF of pus cells, 0-2/HPF RBC, 8-10/HPF Epithelial cells. Other parameters of urine examination were within range Culture was positive. Complete blood count (CBC) parameters showed haemoglobin within normal range (13.2 g%), increase in Total Leucocyte Count (14,500/cumm) with differential count showing 81% Neutrophils, 13% Lymphocytes, 04% Monocytes, 02% Eosinophils. RBC count 4.56 million/cumm, Haematocrit 38.6 U/l, MCV 84.6fl, MCH 28.9pg, normal platelet count of 2.5 lakh/cumm. Liver function test was normal. Renal function test parameters were as follows total Protein 5.5 g/dl, Albumin 3.1g/l, Urea 27.4 mg/dl, Creatinine 1.0 mg/dl, Sodium 136.9 mEq/l, Potassium 4.34 mEq/l, Chloride 96.1 mEq/l. Peripheral smear examination was ordered that revealed microfilaria when stained with Romanowsky stain. This was yet another case of filariasis with non-specific findings on CBC examination.

Case 6: A 55-year-old male presented with fever. Complete blood count (CBC) parameters showed normal haemoglobin (12.7g%), slight increase in Total Leucocyte Count (11,200/cumm) with normal platelet count of 1.53 lakh/cumm. Differential Leucocyte Count 40% Neutrophils, 50% Lymphocytes, 07% Monocytes, 03% Eosinophils. RBC count 4.57 million/cumm, Haematocrit 37.7%, MCV 82.5fl, MCH 27.8pg. He was non-reactive for HIV, HBsAg, HCV and Malaria. However, Typhi Dot came out to be positive. Total protein 6.2 g/dl, Albumin 3.5 g/dl, Bilirubin 0.9 mg/dl with direct bilirubin 0.4 mg/dl and indirect bilirubin 0.5 mg/dl, SGOT 152 U/l, SGPT 122 U/l, Alkaline Phosphatase 270 U/l. His urea and creatinine were normal. Dengue NS1 showed negative test result.On peripheral smear examination showed microfilaria, although, complete blood count parameters were within normal range which was again a case of microfilaria with non-specific symptoms and investigation findings.

DISCUSSION

Filariasis is an ancient disease described in 'Sushruta Samhita' in 6th century B.C, a treatise on medicine written by world famous Sushruta known today as the "Father of Indian Medicine" and "Father of Plastic Surgery". Filariasis is one of the major debilitating diseases globally. [3]

The peak age for filarial infection is 15 to 20 years. In natural life cycle of WuchereriaBancrofti, the adult worm lodges in the lymphatics and microfilaria circulate in the blood. [4] The disease spreads from person to person by mosquito bites. When a female culex mosquito bites a person who has lymphatic filariasis, microscopic worms circulating in the person's blood enter and infect the mosquito. Here man is the definitive host and mosquito is the intermediate host of Bancroftian and Brugian filariasis. [5] Five out of six cases flooded to the hospital outpatient department within a span of 10 days and from the same zone within the city. The patients were not from the same family and were unrelated to each other. So, there might be a possibility that the zone may be harbouring filariasis patient.

The males are about 40 mm long and females 50–100 mm long. Females give birth to as many as 50000 microfilariae per day within the lymphatic system from where they reach blood circulation. They have sheathed, transparent bodies 290 µm in length and 6–7 µm in width. They have a hyaline sheath and central column of nuclei, which do not extend up to the tail. [5]

The clinical manifestations vary from asymptomatic microfilaremia to lymphoedema. In the present study, all the patients as well as the donor did not have conventional symptoms of microfilaremia. The patient as well as the donor did not have any classical features of lymphoedema or elephantiasis. [4,6]

Two patients had pancytopenia, which is a rare clinical manifestation associated with microfilaria. Very few case reports are there highlighting pancytopenia caused by microfilaria. In both the patients' microfilariae were detected in bone marrow. Though both the patients were NS1 positive for dengue, in one case bone marrow was aplastic while in other case it was normocellular. It was unclear whether pancytopenia was due to dengue or toxic effects of microfilaria on bone marrow.

Sharma et al reported six cases. Pancytopenia was seen in all the six cases and hypoplastic marrow was seen in 5 out of 6 cases. One case showed megaloblastic erythropoiesis. In all the six cases microfilaria was seen in the bone marrow aspirate but only two cases showed microfilaria in peripheral smear. [7]Shenoi U et al reported two cases presenting with pancytopenia. In one case bone marrow was aplastic and in second case bone marrow showed megakaryocytic aplasia. [8] Uma Shankar T et al reported one case demonstrating microfilaria with pancytopenia, while the bone marrow showed

DOI: 10.69605/ijlbpr_13.12.2024.56

megaloblastic changes with microfilaria. [9] As with the present study, eosinophilia was not a consistent finding in the above studies.

Anecdotal case reports are there where any transfusion reactions are caused in recipient because of asymptomatic heavy microfilaria load in recipient's blood. However, serious outcomes have not been reported. [10] As the donor's blood was transfused to recipient after major and minor cross match as well as screening it for five approved transfusion transmitted infectious diseases, no other possible cause of transfusion reaction could be thought of except for heavy microfilariae antigenic load in blood circulation.

In a case series by Chavarkar SP, 4 cases were reported with asymptomatic filariasis that were diagnosed on routine low power scanning of peripheral blood smear. [11]

In all the present cases, the manifestations of filariasis could be due to the direct effects of worms or it could be due to the immune response of the host to the parasite. Whatever is the etiopathophysiology, it still needs further investigations and workup.

The exact mechanism of the transit of microfilariae to extravascular tissue spaces is not completely understood. There is a possibility that microfilariae cross the vessel wall by their boring ability to reach the tissue spaces and cause toxic suppression of the bone marrow. [5,6]

The patients were given Diethylcarbamazine (DEC) which is the drug of choice for treatment of bancroftian filariasis and very effective in killing microfilariae. The dose of DEC for treatment of filaria is 6mg/kg body weight per day orally for 12 days given preferably in divided doses after meals. [5]

CONCLUSION

It's interesting to know that detection of microfilaria in all the six cases was entirely an incidental finding and that the patient may present with asymptomatic filariasis, absolutely normal complete blood counts parameters, isolated abnormality in complete blood count parameters like anaemia, mild thrombocytopenia, with or without eosinophilia, monocytosis, bicytopenia, pancytopenia as well as in the form of transfusion reactions.

This study highlights the importance of screening of microfilaria on routine microscopy and which is actually the gold standard detection method.

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