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Case Report

Pathology Section

Wuchereria bancrofti: Unusual Presentation as Pancytopenia

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ABSTRACT

Wuchereria bancrofti is an endemic filarial nematode spread by a mosquito vector. The clinical manifestations vary from asymptomatic microfilaremeia to lymhoedema. We report two cases of microfilaria of *Wuchereria bancrofti* in bone marrow presenting as peripheral pancytopenia. The patient did not have any classical features of lymphoedema or elephantiasis. The diagnostic demonstration of microfilaria with unusual presentations has been done in cytology specimens from various sites. Microfilaria infection in association with peripheral blood pancytopenia has been rarely reported. An aetiopathological co-relation of these haematological manifestations of microfilaria needs further investigation.

Keywords: Bone marrow parasite, Maturation arrest, Microfilariae

CASE REPORT

Case 1

A 14-year-old male presented with generalised weakness, high grade fever and progressive pallor for 1 month. On examination he had pallor and fever. There was no lymphadenopathy or organomegaly. On routine haemogram he had pancytopenia, haemoglobin (Hb) 7 gm%, Total Leukocyte Count (TLC) was 3700/ul and platelet count was 45000/ul. Differential Leucocyte count revealed 85% lymphocytes. No immature cells were seen. Serum biochemical parameters including serum bilirubin, liver enzymes, glucose, vitamin B12, folic acid and creatinine were within normal range. Viral serology was negative. These findings provisionally ruled out megaloblastic anaemia and viral infection. A provisional diagnosis of bone marrow failure was made and bone marrow aspiration and biopsy was done for further evaluation to rule out any hematopoietic neoplasm. Bone marrow smears revealed markedly hypo-cellular particles rich in fat. All hematopoietic elements were markedly reduced, with predominant population of lymphocytes (72%) and plasma cells (6%). In addition, the Leishmann stained bonemarrow smear also revealed few sheathed microfilariae of *Wuchereria bancrofti* with tail end free from nuclei [Table/Fig-1]. The patient was started on DEC along with cyclosporine and supporting transfusions. At 6 month follow-up patient had recovered peripheral blood counts.

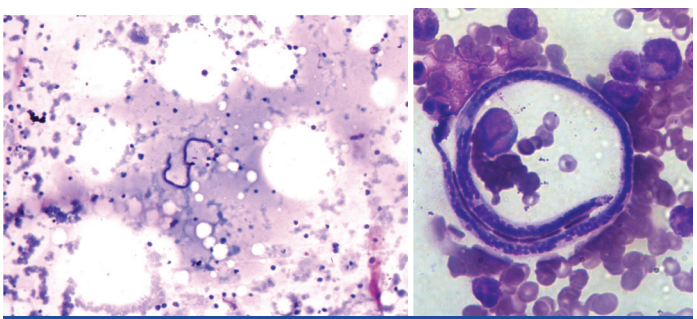
Case 2

A 35-year-old female presented with petechial rashes, fever and mennorhagia for 2 months. Her examination was unremarkable except for presence of pallor and petechial haemorrhages over extremities. Her TLC was 2100/µL with 90% mature lymphocytes, reduced platelet count of 9000/µL and Hb of 6gm%. The bone marrow was hyper cellular with predominance of granulocytic precursors (82%) with maturation arrest. Megakaryocytes were adequate however had reduced thrombopoietic activity. Erythroid precursors had normoblastic maturartion. Dispersed throughout the leishmann stained bone marrow smear were few sheathed microfilariae of *W Bancrofti* with tail end free from nuclei [Table/Fig-2]. The patient left and no follow-up could be obtained.

DISCUSSION

The filarial infection of *W bancrofti* results in a wide spectrum of clinical presentations ranging from asymptomatic microfilaremia to one with chronic manifestations including lymphoedema and elephantiasis. The diagnostic demonstration of microfilaria with unusual presentations has been done in cytology specimens from various sites [1-3]. Microfilaria infection in association with peripheral blood pancytopenia has been rarely reported.

The peak age for filarial infection is 15 to 20 years. In natural life cycle of *W bancrofti*, the adult worm lodges in the lymphatics and microfilaria circulate in the blood. During their circulation, the microfilaria gets lodged in various tissue sites. They may rarely be trapped in the bone marrow. Such cases, though very few in number, have been reported previously [Table/Fig-3] [4-12]. The present cases did not have a classical presentation of lymphatic filariasis, similar to the previous reports [4-9]. Peripheral blood eosinophilia, a common finding in filariasis was not seen in our cases as well as in majority of previous reports [4,6,8]. Shenoi et al., described 2 cases of bone marrow aspirate showing incidental finding of microfilaria. One case had aplastic anaemia and other had megakaryocytic aplasia [8]. Similarily Hemchandran et al., in 2003 reported a single case with aplastic anaemia and co-existing infection with varicella and *Wuchereria bancrofti* [5]. Sharma et al., reported 6 cases of bone marrow aspirate positive for *Wuchereria bancrofti.* Five of the six cases had marrow hypoplasia [4]. Tejwani et al., reported a patient with marrow failure and incidental finding of microfilaria of *Wuchereria bancrofti* [10]. The present cases also point to this rare association of pancytopenia with microfilariasis. Majority of the reported cases report hypoplasia in the marrow, however the second case here had hypercellular marrow with maturation arrest. The aetio-pathological significance of microfilaria in these cases needs to be worked further. The drug of choice



[Table/Fig-1]: Leishmann stained Hypocellular marrow smears with microfilaria (100 X).
[Table/Fig-2]: Leishmann stained marrow smears with myeloid left shift cells and microfilaria of *Wuchereria bancrofti* (400X).

Study	No. of cases	Organo-megaly	PBS finding	Eosinophilia	BM
Sharma et al., [4]	6	Absent	Pancytopenia (5/6)	Absent	Hypoplastic (5/6) with microfilariae
Hemchandran et al., [5]	1	Absent	Pancytopenia	Absent	Aplastic with microfilariae
Pradhan S et al., [6]	1	Absent	Anaemia	Absent	Microfilariae
Molina MA et al., [7]	1	Absent	HIV positive	Present	Hypocellular with microfilariae of Mansonella
Shenoi U et al., [8]	2	1/2	Pancytopenia (1/2)	Absent	Aplastic (1/2) Megakaryocytic aplasia (1/2)
Arundhati et al., [9]	1	Present	Lymphoid blasts	Absent	Acute lymphoblastic leukemia with microfilariae
Tejwani et al., [10]	1	Absent	Pancytopenia	Absent	Aplasia with microfilarae
Zafar U et al., [11]	1	Absent	Normal	Absent	Metastatic epithelial malignancy with microfilariae
Uma Shankar T et al., [12]	1	Absent	Pancytopenia with microfilariae	Absent	Megaloblastic changes with microfilariae
Present report	2	Absent	Pancytopenia	Absent	Aplasia with microfilariae (1/2) Myeloid maturation arrest with microfilariae (1/2)

[Table/Fig-3]: Summary of clinical and hematological features in previous reports.

for treatment of bancroftian filariasis is Diethylcarbamazine (DEC) which is effective in killing microfilariae. The effect on adult worm is uncertain. 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. In addition the patients with pancytopenia need transfusion support and haematinics.

CONCLUSION

It is important to screen, with high suspicion, the marrow smears of pancytopenic patients for parasites. A possible aetiological role of filariasis in bone marrow hypoplasia or maturation arrest needs further investigation.

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