Microfilariae with Acute Myeloid Leukemia: A Common Parasite with Uncommon Association

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Abstract Presence of microfilariae in bone marrow aspirate is an uncommon finding and its association with leukaemia has rarely been described. We present a case of young female from north India in which bancroftian microfilariae was seen in peripheral blood and bone marrow smears as an incidental finding along with 88 % myeloid blast that were positive on myeloperoxidase stain. There was no associated eosinophilia. She was started on diethylcarbazine for microfilariae, before the start of induction chemotherapy for acute myeloid leukaemia. Presently she is post induction and is doing fine.

Keywords Acute myeloid leukaemia · Microfilariae

Introduction

Filariasis is common in India and can present with pyrexia, lymphadenopathy or elephantiasis. Incidental finding of a microfilariae has been reported in the cytological preparation from a wide variety of sites as well as bone marrow aspirates [1–4]. However, presence of microfilariae in peripheral smears or bone marrow aspirates in association with a haematological neoplasm has rarely been described in literature [5, 6].

We present here such a case of 26 year female, who was diagnosed as acute myeloid leukaemia with microfilariae.

Case Report

A 26 year female from Muzaffarnagar, Uttar Pradesh (U.P) presented to our institute with weakness, abdominal pain and mild fever for 15 days. She lived in Faizabad (U.P) before shifting to Muzaffarnagar in 2007. On examination she had pallor, hepatosplenomegaly but no lymphadenopathy. She did not have any leg swelling. CBC showed Hb of 9.0 gm/dl, TLC of 18,600/cumm and platelet count of 27,000/cumm. Peripheral smear examination showed 88 % blast that were positive for myeloperoxidase and 1 % eosinophils along with a sheathed microfilariae with somatic nucleus not reaching up to the tail end, suggesting it to be *Wuchereria bancrofti* microfilariae (Fig. 1a). Bone marrow examination showed a hypercellular packed marrow with more than 95 % blast. Single microfilaria was also seen in one of the smears (Fig. 1b). Multicolour immunophenotyping done by flow cytometry on heparinised bone marrow aspirate sample by standard stain-lyse-wash technique showed presence of blast that expressed CD34, HLADR, CD13, CD33, CD117 and MPO, confirming a myeloid phenotype (Fig. 2). A final diagnosis of AML with microfilariae was put forth. Cytogenetic studies showed a karyotype of 47 XX with trisomy 4, del (11) (q13).

The patient was started on Diethylcarbazine (DEC) in a dose of 100 mg TDS for microfilariae, before the standard 3+7 induction for AML. Presently she is doing fine with post induction marrow being in remission.

Discussion

Since its first description by Pradhan et al. [5], few reports describe presence of microfilariae in bone marrow aspirate

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Fig. 1 a Peripheral smear showing sheathed microfilariae with nuclei not reaching up the tail tip, suggesting it to be a *Wuchereria bancrofti* microfilariae. Few blasts are seen adjacent to it. (Leishman, 20x). **b** Bone marrow aspiration smears showing the microfilariae amidst blasts population. (Leishman, 20x)

Fig. 2 Immunophenotyping done by multicolour flow cytometry using CD45 versus side scatter gating showed 90 % blasts expressing CD34, CD13, CD33, CD117, myeloperoxidase, indicating acute myeloid leukaemia

[3, 4]. Even rare is the association of a leukaemia with presence of microfilariae. To the best of our knowledge there are only two cases reported in literature till date. First

was by Sharma et al. [6] in 2010, a case of AML-M4 with eosinophilia and second by Sonal Jain et al. [7] in 2011, a case of B ALL.

Finding of microfilariae in the present case was just an incidental finding, as there was no symptom related to this parasitic infestation. Similar was the finding in the two previous reported cases. Eosinophilia was not seen in our case, a feature in contrast with Sharma et al. [6]. Immunocompromised state in case of leukaemia has been suggested as the predisposing factor for parasitic infections. But, in a country like ours, where filariasis is endemic in some parts, this may just be an incidental finding.

In conclusion, present case highlights the point that microfilariae may be seen in association with acute leukaemia. Thus, hematopathologists should always keep this in their possibility so that an innocuous easily treatable condition should not be missed in the shadows of a more glaring neoplasm.

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