
A Case with Chronic Eosinophilic Leukaemia Resulting in Blastic Transformation

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ABSTRACT

Chronic eosinophilic leukaemia is a rare myeloproliferative disease different from the chronic myeloid leukaemia. It is a haematologic malignancy that must be considered separately from other causes of eosinophilia due to its remarkable clonal eosinophilia. Here, we describe a case with chronic eosinophilic leukaemia which was initially hypereosinophilic (eosinophil count: $85.4 \times 10^9/L$) and displayed blastic transformation after a 9 months follow up. We suggest the invasion of spleen, probable invasion of the liver and the blastic transformation of this case must be discerned as a different entity rather than the other causes of eosinophilia.

Key Words: Eosinophilic, Hypereosinophilic syndrome, Eosinophilic leukaemia, chronic.

ÖZET

Miyeloblastik Transformasyonla Sonlanan Kronik Eozinofilik Lösemi Olgusu

Kronik eozinofilik lösemi (CEL) nadir görülen ve kronik miyeloid lösemiden farklı miyeloproliferatif bir hastalıktır. Klonal eozinofil artışı nedeniyle diğer eozinofili nedenlerinden ayrı ele alınması gereken hematolojik bir malignitedir. Burada hipereozinofili ile seyreden (eozinofil sayısı: $85.4 \times 10^9/L$) ve takibe alındıktan dokuz ay sonra blastik transformasyon gösteren bir kronik eozinofilik lösemi olgusu sunmaktayız. Bu tablonun dalak tutulumu, muhtemel karaciğer tutulumu ve blastik transformasyonla sonlanması nedeni ile diğer eozinofili nedenlerinden ayırılması gerektiğini düşünüyoruz.

Anahtar Kelimeler: Eozinofili, Hipereozinofilik sendrom, Eozinofilik lösemi, kronik.

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INTRODUCTION

As not belonging to known reasons of chronic eosinophilia states, the idiopathic hypereosinophilic syndrome (HES) is a syndrome characterized with an eosinophil count higher than $1.5 \times 10^9/L$ and long lasting more than six months and invasion of organs (especially cardiac invasion)^[1]. There are many case reports informing that some of these cases displays clonal features^[2-6]. This condition had been proposed to be a different disease with the name of chronic eosinophilic leukaemia (CEL)^[6,7]. As CEL is a rarely encountered haematologic malignancy it is hard to differentiate it from HES and the other reasons of eosinophilia (such as parasitic infections, allergic diseases, acute myeloblastic leukaemia with eosinophilia, chronic myeloid leukaemia, myelodysplastic syndromes and lymphoid malignancies).

To diagnose chronic eosinophilic leukaemia, it is necessary to exhibit cytogenetic abnormalities and to exclude other reasons. The cytogenetic abnormalities of CEL are mostly related to translocations on chromosome 5^[2]. The mechanisms of chromosomal abnormalities and the development of CEL are still obscure^[6,7]. The progression of hypereosinophilia to blastic transformation or its pattern of increase in blasts is important for the clonal characteristic of the disease^[6]. Some of the chronic eosinophilic leukaemia cases advanced to myeloblastic transformation had been reported^[4,7]. We present a case with CEL and displaying blastic transformation and who has characteristics of myeloproliferative disease such as hepatosplenomegaly and a rise in mature eosinophils for a limited duration.

A CASE REPORT

A male patient who is 25-years old and has been followed up for two years due to absolute eosinophilia and hepatosplenomegaly was referred to our haematology clinic for further investigations in February 2002 by an internalist. The patient suffered from fati-

gue, anorexia, and weight loss (10 kg within eight months). A physical examination revealed splenomegaly (10 cm below the costal margin) and hepatomegaly (3 cm below the costal margin). Laboratory results were as follows: Hb 10.8 g/dL, Hct 30%, MCV 86.6 fl, WBC $14.6 \times 10^9/L$ and platelets were $132 \times 10^9/L$. At peripheral blood smear vacuolated and mature eosinophils were detected as 80%. There was an increase of eosinophilic precursors on bone marrow aspirations. There was no rise in blast count. No parasite or parasitic eggs detected at stool analysis. Chest X-rays and echocardiograms were found to be normal. No other findings at abdominal ultrasound were obtained except hepatosplenomegaly. IgE levels were normal. ANCA and HBsAg were negative.

Splenectomy was performed for diagnosis in April 2002. Matured eosinophilic infiltration was shown at spleen biopsy material (CD68+, LCA+) (Figure 1). In May 2002 his full blood count was: Hb 12.2 g/dL, Hct 37.5%, WBC $62.3 \times 10^9/L$, platelet count $690 \times 10^9/L$ and eosinophils $53 \times 10^9/L$. Mature and dysplastic appearing eosinophils with marked cytoplasmic vacuolization encountered at peripheral blood smears. Leukocyte alkaline phosphatase score was normal. BCR-ABL fusion gene was negative by RT-PCR method. No specific cytogenetic analysis was performed. 32 mg of prednisolone and 500 mg of hydroxyurea were admi-

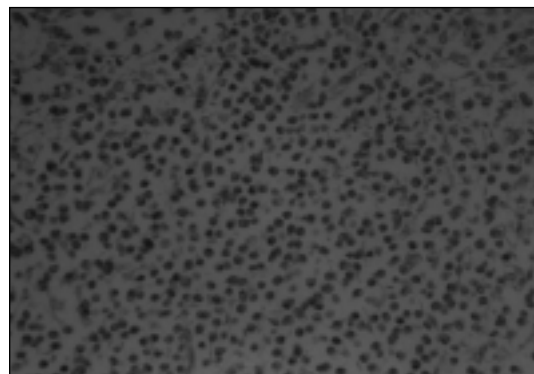


Figure 1. Spleen biopsy material showed intense eosinophilic infiltration (HE stain, X 400).

nistered in June 2002. Liver was palpable about 5 cm below costal margin on August 2002. The hydroxyurea dose was increased to 1500 mg/day when WBC count rose to $100 \times 10^9/L$ (eosinophils: $85.4 \times 10^9/L$). The patient was admitted to the hospital. At peripheral blood smears, blastic cells were detected about 62% and mature eosinophils with cytoplasmic vacuoles, basophilic and eosinophilic granulation together in one cell (dysplastic eosinophils) (Figure 2, 3). No material could be obtained from bone marrow aspirations. In the immunophenotyping of the peripheric blood samples results were as CD33+ (90%), CD34+ (69%), HLA-DR+ (67%), CD13+/- (28%). FcεR expression was very

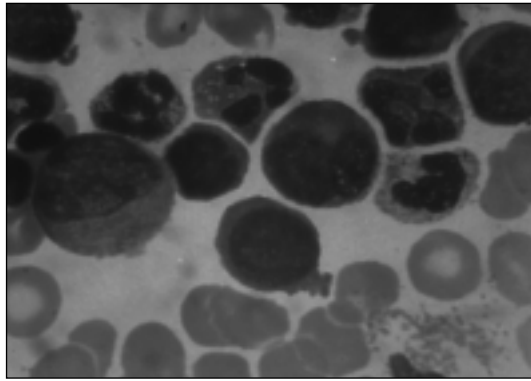


Figure 2. Increased eosinophils with cytoplasmic vacuolization and blastic cells in peripheral blood smear in blastic transformation phase (May-Grunwald and Giemsa stain, X 1000).

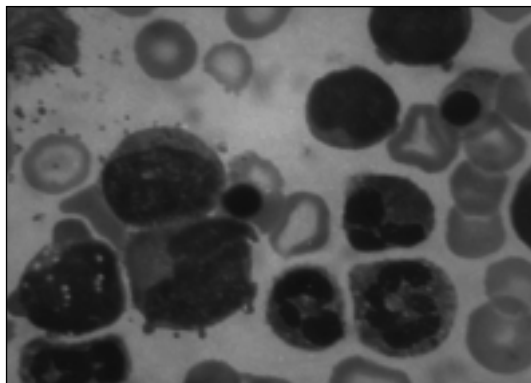


Figure 3. May-Grunwald-Giemsa-stained blood smear of peripheral blood showing dysplastic eosinophils and myeloblasts in blast crisis (X 1000).

low. Patient died at the 7th hospital-day due to cardiac arrest following pulmonary arrest.

DISCUSSION

There is tissue invasion (esp. spleen) with significant eosinophilia at this presented case. Although those findings suggest us to accept this case as CEL, similar findings may also be observed both in chronic myeloid leukaemia and HES. The lack of BCR-ABL fusion gene expression in this case suggests other disorders but chronic myeloid leukaemia.

If the long lasting eosinophilia could not be attributed to any known causes the state is described as HES^[8,9]. HES patients compose a highly heterogenous group beside that the nature of those cases have not been delineated significantly^[7]. The prognosis of HES is highly variable ranging a few months to 20 years^[8,10]. Some patients with HES patient display chromosomal abnormalities and acute blastic transformation which are the characteristics of myeloproliferative, clonal disease^[7]. The eosinophilic leukaemia term is accepted to be used for these cases since this subgroup mostly displays leukaemic characteristics^[6,7,11,12].

It is hard to differentiate CEL which displays especially blastic transformation from the other forms of acute leukaemia (as acute myelomonocytic leukaemia with eosinophilia, rarely T-cell acute lymphoblastic leukaemia) or myelodysplastic syndromes displaying eosinophilia. We could not perform a cytogenetic study at this presented case but it is obvious that there is a 3 years lasting chronic phase in this case. After that phase a minimal matured myeloblastic transformation was observed. The possibility of chronic myeloid leukaemia is decreasing since initially there was no displasia on bone marrow and BCR-ABL was negative. CEL cases advanced to blastic transformation had also been notified previously^[4,7,13]. Acute blastic transformation is suggesting that the initial hypereosinophilic state is to be originating

from a clonal cause or be a myeloproliferative disease which has chronic or acute phases^[14]. Although the clonality of the disease could not be displayed it was notified that the disease is feasible to the term CEL due to its pattern and clinical findings (as organ invasions, blastic transformation)^[4,7,13,15].

The detection of FcεR expression at a very low level by the immunophenotyping during the blastic transformation phase and IgE levels at a normal range in our case may be interesting since hypereosinophilia in this case may show clonal characteristics.

Finally, we considered the case to have CEL regarding the clinical pattern of the disease, the splenic invasion, hepatomegaly and the observation of blastic transformation and most notably, the lack of BCR-ABL fusion gene expression.

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