SECONDARY ACUTE BASOPHILIC LEUKEMIA (ABL); A DISTINCT ENTITY OF MYELOID MALIGNANCIES, VERSUS BASOPHILIC BLAST PHASE- CHRONIC MYELOID LEUKEMIA (BP-CML). A CASE REPORT

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Introduction

- Acute basophilic leukemia (ABL) is an uncommon form of acute myelogenous leukemia (AML), characterized by blasts with basophilic granules. Different from mast cells (MCs), basophils show toluidine blue positivity on cytochemical staining, an immunophenotype on flow cytometry with the expression of myeloid markers, such as CD13, CD34, HLA-DR and a diverse group of cytogenetic abnormalities. Most cases of basophilic leukemia have been reported to have developed from other hematological disorders, such as chronic myeloid leukemia (CML) and myelodysplastic syndromes (MDS).

Objectives

- Here, we report a case of a young man diagnosed with acute basophilic leukemia arising from CML after 2 years

Methods

- A 25 -year-old male patient was diagnosed with CML in the chronic phase (CML-CP) in May 2022 and treated with Imatinib at a daily dose of 400mg and achieved cCR. Under this treatment, the disease progressed 2 years later in October 2024. Our patient develops persistent night fever of unknown origin, CBC showed leukocytosis, anemia and thrombocytopenia, BCR::ABL fusion gene done and was 35%. Cytogenetic analyses showed a normal karyotype with t(9;22).

Results

- Toluidine blue positivity on cytochemical staining demonstrated there were 60% basophils in peripheral smear, and bone marrow aspirate showed hypercellular marrow for age, marked increase of the basophilic component. The immature basophils and blast cells constituted ~65% of all nucleated marrow elements. They had irregular nuclei with clumped chromatin and a varying number of coarse basophilic granules. Mature basophils were about 10% of all marrow elements. Eosinophils and their precursors had increased (9%). Immunophenotyping showed 75% immature myeloid cells expressing positive CD33, CD117, CD11b, HLA-DR and negative CD34, MPO and CD64. T315i mutation was negative. Abdominal Ultrasound showed moderate splenomegaly, mild clear ascites

Main outcome

- The patient was treated with 7+3;cytarabine (200 mg/m2 over 7d) and doxorubicin(60 mg/m2 over 3d) in combination with dasatinib 200mg daily which resulted in complete remission (CR). The patient started a consolidation course with high-dose cytarabine and received 2 cycles to date.

Conclusion

ABL is a rare type of AML (<1%) and is diagnosed with difficulty and most of cases reported developed secondary to CML.

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