

Chronic Myelomonocytic Leukemia: A case report.

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Abstract: Chronic Myelomonocytic leukemia is a Myelodysplastic/Myeloproliferative neoplasm. This disorder presents with monocytosis and dysplasia. We present a case of a 65 year old male presenting to our department with fever and weight loss for 4 months, monocytosis with dysplastic and hyperplastic bone marrow.

Keywords (from MeSH): Myelodysplastic Syndromes, Myelodysplastic-Myeloproliferative Diseases, Leukocytosis

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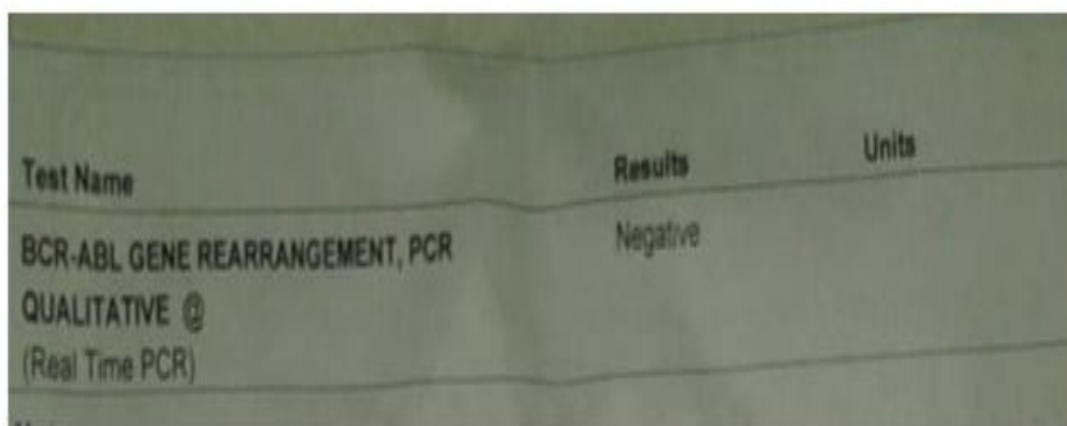
I. Introduction

Chronic Myelomonocytic leukemia (CMML) is a clonal stem cell disorder having features of both features of both Myelodysplastic Syndrome and Myeloproliferative Syndrome. There has been difficulties in classifying this disorder. Original and 1982 revision of French- American-British classification placed this disorder under Myelodysplastic syndrome (FAB) [1]. Finally, in 2008 WHO recognized a separate category called as Myelodysplastic/ Myeloproliferative (MDS/MPN) neoplasms which had features of proliferation from Myeloproliferative neoplasms and dysplasia from the myelodysplastic syndromes. MDS/MPN includes CMML, juvenile myelomonocytic leukemia (JMML), and atypical chronic myeloid leukemia (aCML). [2]

According to the Surveillance, Epidemiology, and End Results (SEER): the United States cancer surveillance program 2006 to 2010, the age-adjusted incidence rate of CMML was 4 per 10,00,000. [3] Here we present a case report of CMML encountered in our hospital.

II. Case Report

A 65 year old male presented to our hospital with complaint of intermittent fever and weight loss for past 4 months. On abdominal examination, the liver was palpable 5 finger breadths below the right costal margin in the mid clavicular line and with palpable spleen. Ultrasound revealed fatty liver with renal disease. Investigations revealed hemoglobin- 8.7 g/dl, White cell count- 1,00,00/ μ L (polymorphs- 45%, blast 4%, promyelocytes-4%, myelocytes- 7%, metamyelocytes- 9%, monocytes- 15%), absolute monocyte count- 15,000/ μ L, platelet count 75,000/ μ L. PBF shows normochromic & normocytic RBCs, dysplastic platelets.



| Test Name | Results | Units |
|---|----------|-------|
| BCR-ABL GENE REARRANGEMENT, PCR QUALITATIVE @ (Real Time PCR) | Negative | |

Figure 1: Report of BCR ABL gene rearrangement, Polymerase Chain Reaction (PCR) Qualitative [Real time PCR]

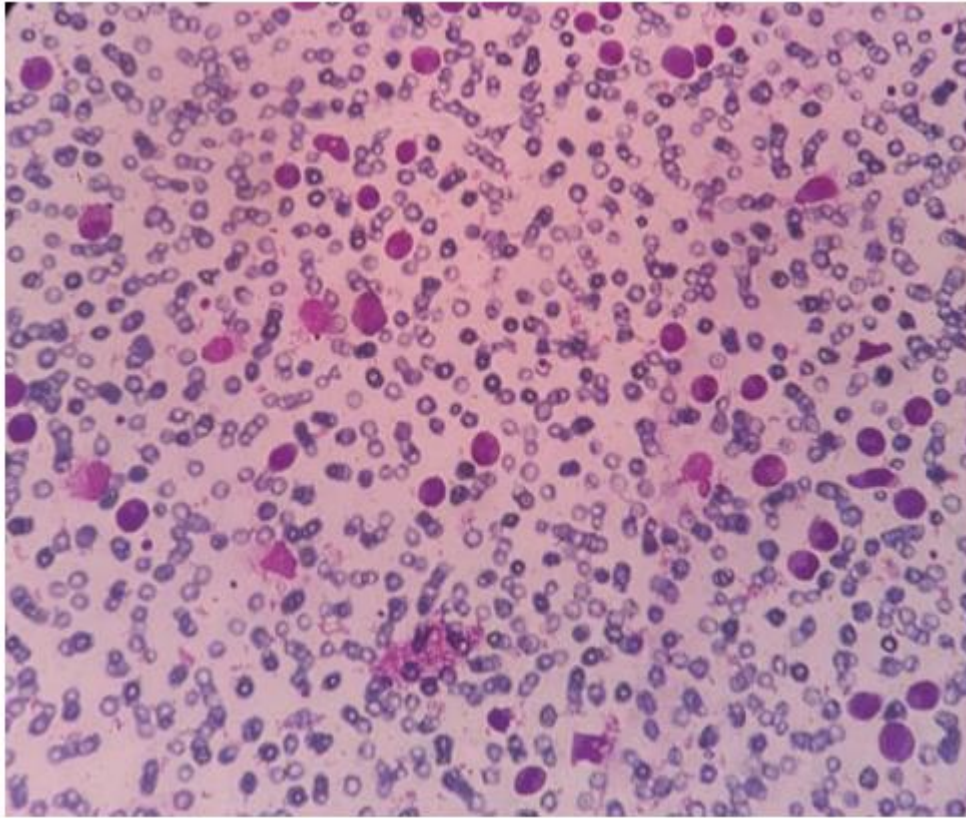


Figure 2: Peripheral Blood Film showing Monocytoid cells.

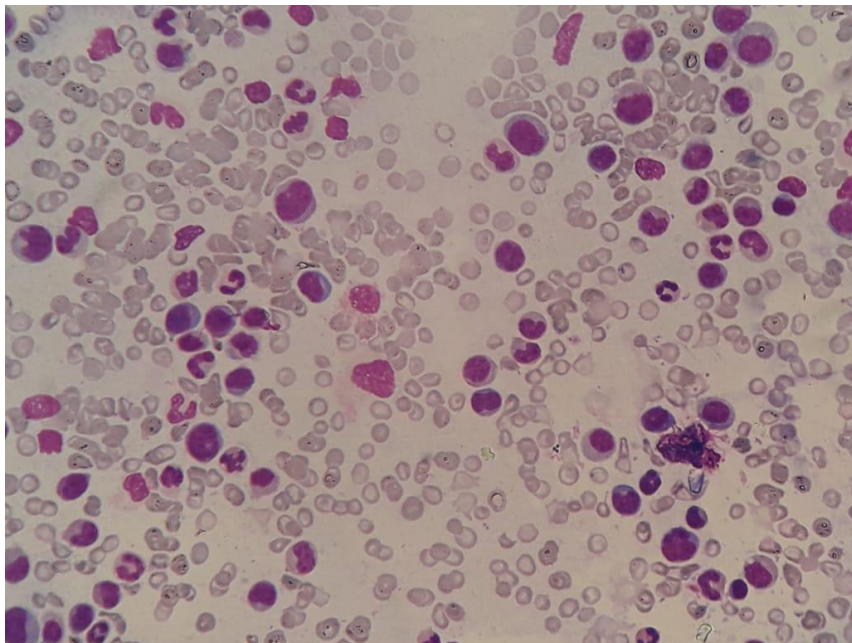


Figure 3: Bone marrow aspiration cytology showing monocytoid cells (promonocytes and monocytes constituting 36% of the non erythroid cells)

Bone Marrow Aspiration revealed a hypercellular bone marrow (with myeloid: erythroid ratio of 6.1:1), mildly megaloblastic. Erythropoiesis was relatively suppressed with megaloblastic maturation. Granulopoiesis was markedly increased in myeloid and monocytic series. With monocytes constituting 36% of non erythroid cells. Blasts were 5% of non erythroid cells. Pseudo-Pleghuet cells were present. Megakaryopoiesis was adequate but dysplastic (micromegakaryocytes were present).

Suspecting CMML, BCR ABL by real time polymerase chain reaction (RT-PCR) was done. Which came out to be negative and ruled out chronic myeloid leukemia.

III. Discussion

This patient had monocytosis with blasts in peripheral blood film which is caused by chronic myelomonocytic leukemia (CMML), juvenile myelomonocytic leukemia or AMLs with a monocytic component. A bone marrow examination is essential to differentiate between CMML or AMLs with a monocytic component. [4].

CMML is a clonal hematopoietic stem cell disorder having features of both Myelodysplastic Syndrome and Myeloproliferative Syndrome.

WHO diagnostic criteria for CMML is:-

1. Persistent peripheral blood monocytosis ($\geq 1000/\mu\text{L}$) with monocytes accounting for $\geq 10\%$ of the leukocytes
2. WHO criteria for BCR-ABL1—positive chronic myeloid leukemia, primary myelofibrosis, polycythemia vera and essential thrombocythemia are not met
3. No rearrangement of PDGFRA, PDGFRB or FGFR1 and no PCM1-JAK2 (which should be specifically excluded in cases with eosinophilia)
4. Blasts constitute $< 20\%$ of the cells in the peripheral blood and bone marrow
5. Dysplasia involving ≥ 1 myeloid lineages or if myelodysplasia is absent or minimal, criteria 1—4 are met and: - an acquired, clonal cytogenetic or molecular genetic abnormality is present in haematopoietic cellsc or the monocytosis has persisted for ≥ 3 months and all other causes of monocytosis (e.g. malignancy, infection, and inflammation) have been excluded

Patients of CMML can be subdivided into MDS type CMML in which the WBC count is less than 13,000/ μL and MPN type CMML in which the WBC count is greater than 13,000/ μL [5]. Patients with MDS-type of CMML presents with fatigue, bleeding and infection. Whereas, MPN-type of CMML presents with constitutional symptoms like fever, night sweats and weight loss, along with abdominal discomfort from splenomegaly [6]. Occasionally, skin involvement (leukemia cutis) has been the initial presentation of CMML. [7] Most often though the patients are asymptomatic and the abnormality is discovered as an incidental finding on routine hemogram.

In peripheral blood film, monocytes are mature usually, but they can exhibit unusual nuclear segmentation or chromatin pattern or abnormal granulation. Blasts and promonocytes may be seen but their number should not exceed greater than 20%. Dysplastic neutrophils (abnormal granulation, abnormal nuclear segmentation) may be seen but is more often associated with low or normal WBC counts. Mild basophilia may be present. Some cases of CMML are also associated with eosinophilia, such disorders must be differentiated from myeloid neoplasms with eosinophilia having genetic rearrangements [8] [9].

Bone marrow is usually hypercellular [10]. Dysgranulopoiesis is present in most of the patients of CMML. Dyserythropoiesis may be seen (megaloblastoid and/or ring sideroblasts). Micromegakaryocytes are usually found in patients of CMML. [9] [11]

IV. Conclusion

When a patient presents with absolute monocytosis CMML should be kept as one of the differentials especially if it is associated with blasts less than 20%. CMML is difficult to diagnose and may be confused with acute myeloid leukemias with monocytic component or myeloproliferative disorders or myelodysplastic syndromes.

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