

BLASTIC CRISIS AND MYELOFIBROSIS SIMULTANEOUS COMPLICATIONS IN A CASE OF CHRONIC MYELOCYTIC LEUKEMIA

Pages with reference to book, From 151 To 153

Khalid Hassan (Department of Pathology (Haematology) Allama Iqbal Medical College Lahore.)

Abstract

A case of chronic myelocytic leukemia is reported. He developed blastic crisis as well as myelofibrosis, simultaneously as a complication, after 1-1/2 years treatment with myeleran.

Introduction

Blastic crisis is a common complication of chronic myelocytic leukemia (Karanas and Silva, 1968; Monfardini, 1973). Myelofibrosis occurs in some patients at terminal stages (Gralnick, 1971). Different myeloproliferative disorders may be complicated by each other. It happens most probably because granulocytic, erythrocytic and fibrocytic cells have a common precursor (Nau and Hoagland, 1971). Simultaneous occurrence of blastic crisis and myelofibrosis is very rare in chronic leukemia.

Material and Methods

The patient was a known case of chronic myelocytic leukemia. After careful clinical evaluation, he was initially subjected to a peripheral blood examination. It included Haemoglobin estimation, Total leucocyte count, Erythrocyte sedimentation rate, Platelet count, Differential leucocyte count and Red cell morphology. Bone marrow aspiration and trephine biopsies were performed at posterior iliac creast using Saleh's and Grandner's needles, respectively. Bone marrow smears and trephine imprints were stained using May-Grunwald-Giemsa stain.

Trephine biopsy was fixed in formal-saline and decalcified in 8% nitric acid. It was processed through ascending grades of acetone, cleared in xylene, and embedded in molten paraffin wax. Block were made and multiple 3-4 microne thick sections were cut. They were stained using Haematoxylin and Eosin stains. Reticulin (Gar-don and Sweet method) was performed on one section. For examination of the slides, light microscope (Ortholux-II) was used.

Results

The patient was a male, 35 years of age. He was diagnosed as a case of chronic myelocytic leukemia 1-1/2 years ago. During this period, he remained under treatment with myeleran in Radiotherapy unit of Mayo Hospital, Lahore. In March, 1980, he was admitted in Services Hospital, Lahore, with complaints of malaise, lassitude, rapidly developing pallor, bleeding from the gums and feeling of heaviness in the left flank. On examination, he showed pallor, fever, lymph node enlargement in both axillae, and splenomegaly (up-to the umbilicus).

Peripheral blood picture was as follows:-

E.S.R. 130 mm after one hour (Westergern's method).

Haemoglobin 8.2 G/100 ml

White cell count 51,650/cmm

Platelet count 70,000/cmm

Neutrophils	39%
Lymphocytes	3%
Basophils	8%
Monocytes	8%
Myeloblasts	12%
Metamyelocytes	7%
Myeloblasts	23%

Blood smear showed anisocytosis, severe poikilocytosis, mild microcytosis and hypochromia. A few tear drop cells were also observed.

Bone Marrow Smears and Trepine Imprints

Bone marrow smears and trephine imprints were hypercellular. Erythropoiesis was hypoplastic and normalastic. Myelopoiesis was hyperplastic, and all the stages of maturation were seen. Myeloblasts constituted more than 30% of nucleated cells of the marrow (Fig. 1).



Fig.1: Photomicrograph of bone marrow trephine imprint showing myeloblasts (arrow). May—Grunwald-Giesma stain x 1250.

Basophilic precursors were prominent on the smears. Megakaryocytes were decreased in number.

Bone Marrow Trephine Biopsy

Histological sections of trephine biopsy showed normal bony trabeculae. The marrow fragments at most of the places were replaced by sheets of densely packed fibrous tissues (Fig. 2 and 3).

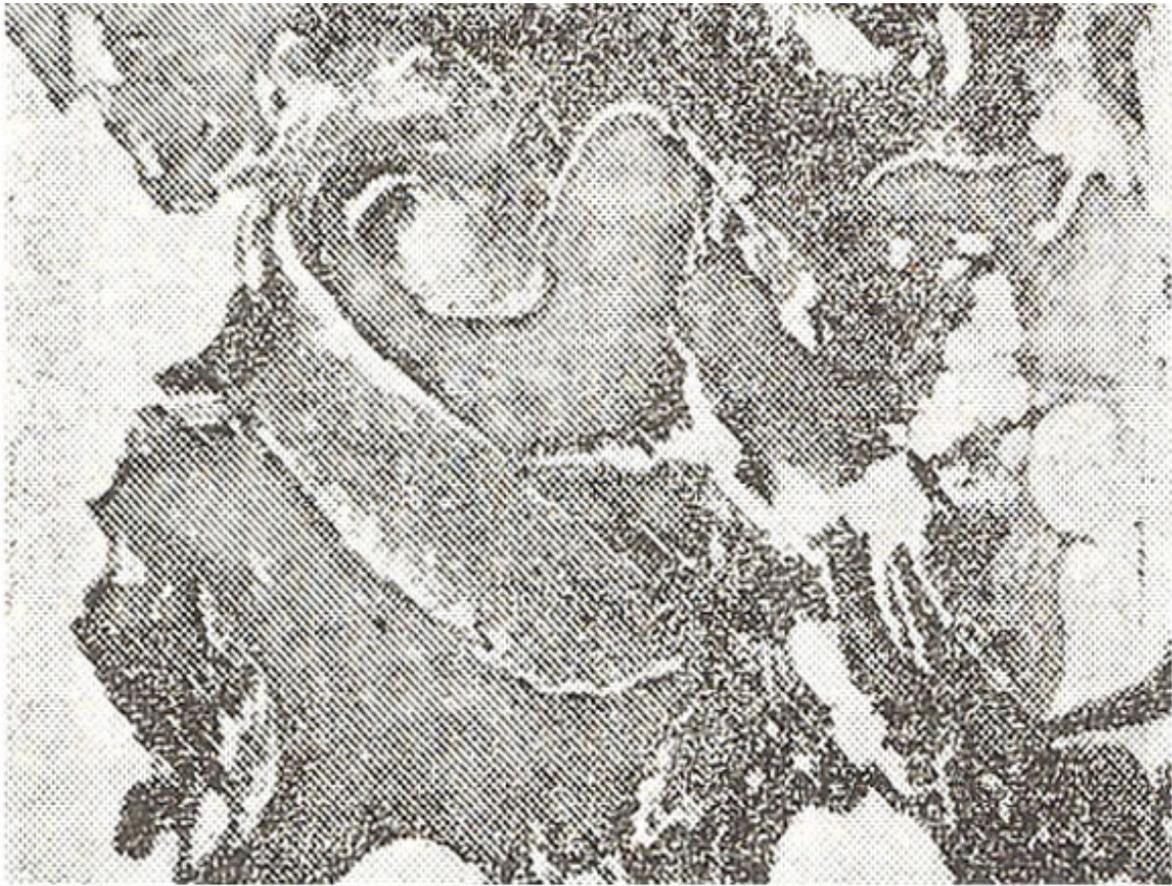


Fig. 2: Photomicrograph of bone marrow trephine biopsy section, showing normal bone trabeculae, and marrow fragments, replaced by fibrous tissue. Haematoxylin and Eosin x 200.



Fig. 3: Photomicrograph of bone marrow trephine biopsy section, as shown in figure 2, in higher magnification x 500.

At other place, fragments were hypercellular, and contained myeloid series cells with predominance of blast cells.

Trephine sections stained for reticulin (Gordon and Sweet method) showed gross increase in reticulin. On the basis of these findings, a simultaneous occurrence of blastic crisis and myelofibrosis was diagnosed in a case of chronic myelocytic leukemia.

Discussion

Karanas (1968) and Monfardini (1973) reported the incidence of blastic crisis in chronic myelocytic leukemia as 56% and 60% respectively. Whereas myelofibrosis may develop in the case of chronic myelocytic leukemia this complication is relatively rare (Gralnick, 1971). Myelofibrosis most probably occurs due to an unidentified abnormal stimulus that results in excessive proliferation of fibroblasts and osteoblasts (Ward and Block, 1971).

Myeloproliferative disorders, which include Myelofibrosis (MF), Chronic Myeloid Leukemia (CML) and Polycythemia Rubra Vera (PV) are hypothetically disorders of uncommitted stem cells. During their clinical course these disorders may be complicated by each other or acute myeloblastic leukemia (AML).

Superimposition of more malignant disorders, on different myeloproliferative diseases, rapidly

accelerates the downhill clinical course, and worsens the prognosis and response to treatment. This patient originally had chronic myelocytic leukemia. After a treatment with myleran for 1-1/2 years, he developed constitutional symptoms (fever, malaise, lassitude) and anaemia rapidly. He also developed lymphadenopathy and splenomegaly. His peripheral blood picture bone marrow aspiration and trephine biopsies lead to a diagnosis of chronic myelocytic leukemia complicated by myelofibrosis and blastic crisis. A simultaneous superimposition of the later two disorders on chronic myelocytic leukemia supports the concept that myeloproliferative diseases are basically due to some defect at uncommitted stem cell level.

References

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