An Unusual Case Report: Acute Lymphoblastic Leukemia in a Patient with Previously Treated Multiple Myeloma

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Introduction

We report a case of a 72 year old Caucasian male with a diagnosis of IgA/Kappa multiple myeloma (MM) established in 2000. He achieved a complete remission (CR) with vincristine, doxorubicin, dexamethasone (VAD). He relapsed in 2006 and was reinduced into CR with lenalinomide and dexamethasone. The patient received maintenance therapy with lenalidomide and remained in CR for the last 4 years prior to this admission. He presented with sudden onset of pancytopenia (table 1). A bone marrow aspirate was a dry tap but the biopsy revealed a B lymphoblastic leukemia (ALL) arising in an extensively fibrotic marrow.
Acute myelofibrosis is more commonly associated with myeloproliferative disorders and is extremely rare with acute lymphocytic leukemia, when occurring, mostly described in pediatric patients. B lymphoblastic leukemia is a hematologic disorder involving lymphoblasts of the B cell lineage which most commonly affects young children. Multiple myeloma is a plasma cell neoplasm typically affecting adults over 50. The presence of MM, acute myelofibrosis and ALL in one patient to the best of our knowledge has never been reported.

Materials and Methods

Peripheral blood and bone marrow specimens were studied to rule out possible relapsed myeloma, plasma cell leukemia or unusual lenalidomide toxicity. Hematoxylin eosin, reticulin, trichrome and immunohistochemical stains were evaluated. The grade of fibrosis was determined using the WHO scoring system. Samples were reviewed by two independent hemato-pathologists.

Laboratory and Microscopic Findings

Table 1. CBC Results

WBC	0.9 K/cmm
RBC	2.30 M/cmm
Hgb	7.1 g/dL
Hct	19.2 %
MCV	83.6 fL
MCH	30.6 pg
MCHC	35.9 g/dL
RDW	15.7 %
Platelet	38 K/cmm
Segs	53.0 %
Lymphocytes	42.4 %
Monocytes	1.2 %
Eosinophils	2.9 %
Basophils	0.5 %

Table 2. Bone marrow differential

Blasts:	66%
Promyelocytes:	1%
Myelocytes:	1%
Metas:	2%
Bands & PMN's:	11%
Eos:	2%
Baso:	12%
Monos:	1%
Lymphs:	1%
Plasma cells:	0%
Erythroids:	7%

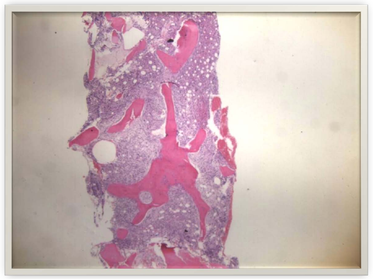


Fig.1 Bone marrow core biopsy demonstrating an extensively fibrotic marrow, 10x

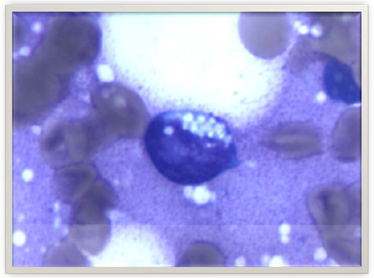
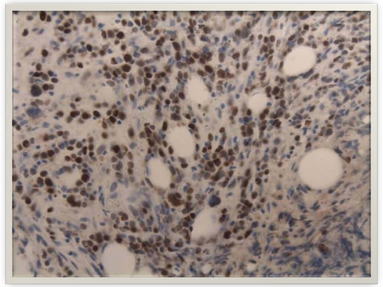


Fig.2 Bone marrow touch preparation showing lymphoblasts with vacuolated cytoplasm, 100x



Fig, 3 Positive TdT stain indicative of a lymphoblastic population, 50x

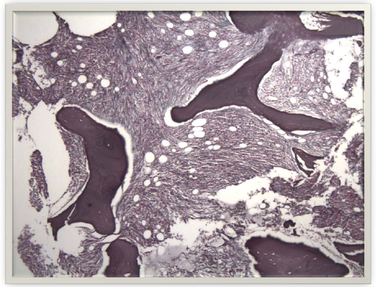


Fig. 4 Reticulin stain demonstrating grade 3 reticulin fibrosis (WHO semiquantitative grading system), 20x

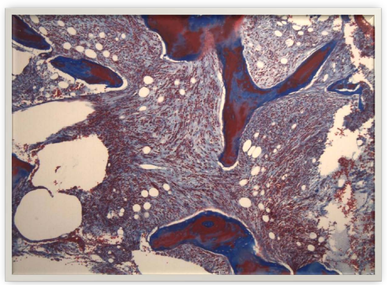


Fig. 5 Trichrome stain demonstrating extensive myelofibrosis, 20x

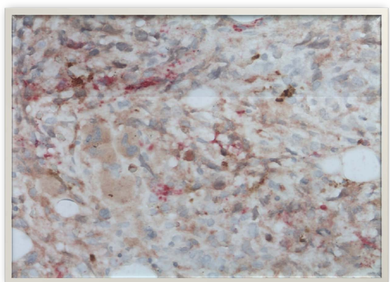


Fig. 6 Scattered plasma cells are polyclonal with Kappa/lambda dual stain,, 50 x

Results

Histological sections from the bone marrow core biopsy revealed a diffuse infiltrate by B-lymphoblasts in an extensively fibrotic marrow (Fig. 1). Touch preparation yielded a bone marrow differential consisting predominantly of blasts (Table 2) and demonstrated lymphoblasts with vacuolated cytoplasm (Fig. 2). The blast population was consistent with a B-lymphoblast phenotype, demonstrating positivity for CD10, CD19, CD20, TdT (Fig. 3); negative for CD2, CD3, CD4, CD7, CD8, CD34, CD38, CD56, CD138, CD117, cyclin-D1, and EBV-LMP. Stromal fibrosis was confirmed by reticulin and trichrome stains (Fig. 4-5). Recurrent multiple myeloma was ruled out based on normal results of serum and urine protein electrophoresis and polyclonal plasma cells with dual kappa/lambda expression (Fig. 6) The patient is currently in complete remission after eight cycles of Hyper-CVAD/MTX-ARAc chemotherapy regimen.

Conclusions

In this report, we document an unusual presentation of acute B-lymphoblastic leukemia with extensive acute myelofibrosis arising in a patient with previously treated multiple myeloma and in complete remission. Reported cases of acute leukemia in MM have been myeloblastic or myelomonoblastic. Bone marrow fibrosis when present in MM is chronic in nature. The association between MM, acute myelofibrosis and ALL in this patient remains unknown but very intriguing.

REFERENCES

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