Available online at www.sciencedirect.com
ScienceDirect
Leukemia Research 32 (2008) 1472–1475
Leukemia Research
www.elsevier.com/locate/leukres

Case report

Granulocytic sarcoma of Core-binding Factor (CBF) acute myeloid leukemia mimicking pancreatic cancer

Henning Sebastian Schäfer[a], Heiko Becker[a], Annette Schmitt-Gräff[b], Michael Lübbert[a,*]

[a] *University of Freiburg Medical Center, Department of Hematology/Oncology, Freiburg, Germany*
[b] *University of Freiburg, Department of Pathology, Freiburg, Germany*

Received 22 November 2007; received in revised form 10 February 2008; accepted 10 February 2008
Available online 5 May 2008

Abstract

Granulocytic sarcoma mimicking a synchronous second primary neoplasm (SPN) constitutes a diagnostic and therapeutic challenge particularly in elderly patients. We report on a 75-year-old female presenting with a Core-binding Factor (CBF) AML of M4eo subtype. The patient also had jaundice, highly elevated bilirubin, lipase, alkaline phosphatase (AP), CA 19-9, and a pancreatic mass highly suspicious of infiltrating pancreatic carcinoma. However, a biopsy demonstrated granulocytic sarcoma. Since the patient had no comorbidities and had been in excellent performance status until the diagnosis of AML, induction chemotherapy was initiated, with subsequent normalization of bilirubin, CA 19-9, lipase and AP. Complete hematologic remission of AML was attained and the pancreatic mass could not be detected anymore. Retrospective analysis of the c-kit protooncogene did not disclose activating mutations of exons 8 or 17. Following one consolidation treatment, the patient remained in excellent health until relapse occurred 7 months later and she succumbed to AML. In conclusion, AML can rarely mimic the clinical picture of pancreatic cancer. The initially good response of this CBF leukemia highlights the principal usefulness of aggressive induction chemotherapy also in older AML patients, if they are carefully selected not only according to biological risk factors such as cytogenetics, but also to "host factors" (good performance status, lack of comorbidities, etc.).

Keywords: Chromosomal translocations; Transcription factor; Comorbidity score; Elderly patients; Second primary neoplasms

1. Case report

We report on a 75-year-old female with AML complicated by cholestasis. Her past medical history was negative for significant comorbidity, she had been very active and in excellent performance status. She presented with a 3-week history of upper abdominal pain, mild weight loss and elevated white blood count (WBC). Physical examination on admission showed a performance status of ECOG 3, jaundice and epistaxis. There was no evidence of lymphadenopathy, hepatosplenomegaly, gingival hyperplasia or neurologic findings. Laboratory work showed a WBC of 59.7×10^9/l. Hemoglobin was 10.1 g/dL, platelet count was 44×10^9/l, the peripheral blood smear showed 70% blasts with sparse granulation and no Auer rods. In addition, total bilirubin was elevated to a maximum of 12.5 mg/dl, direct bilirubin to 8.8 mg/dl, as were lipase (195 U/l), alkaline phosphatase (AP, 605 U/l) and CA 19-9 (2256 U/l). Bone marrow aspirate showed almost complete infiltration by blasts that expressed CD34, HLA-DR, CD33, CD117, CD13 and MPO. A diagnosis of acute myeloid leukemia (AML) of myelomonocytic subtype with abnormal eosinophils (FAB M4eo) was made (Fig. 1A). Cytogenetics revealed an inversion of chromosome 16 as sole chromosomal abnormality. Magnetic resonance imaging (MRI) revealed a large pancreatic mass not directly accessible to biopsy and highly suspicious of diffuse infiltrating pancreatic cancer (Fig. 1B). However, a biopsy of the gastric mucosa disclosed a granulocytic sarcoma (Fig. 1C and D) with overexpression of c-kit by immunohistochemistry (Fig. 1E). Since the patient presented with the "good-risk" subtype of AML with inversion 16 (a CBF leukemia), had a very strong treatment wish and had been in very good

* Corresponding author at: Medical Center, University of Freiburg, Freiburg, Germany.
E-mail address: luebbert@mm11.ukl.uni-freiburg.de (M. Lübbert).

0145-2126/$ – see front matter © 2008 Elsevier Ltd. All rights reserved.
doi:10.1016/j.leukres.2008.02.017

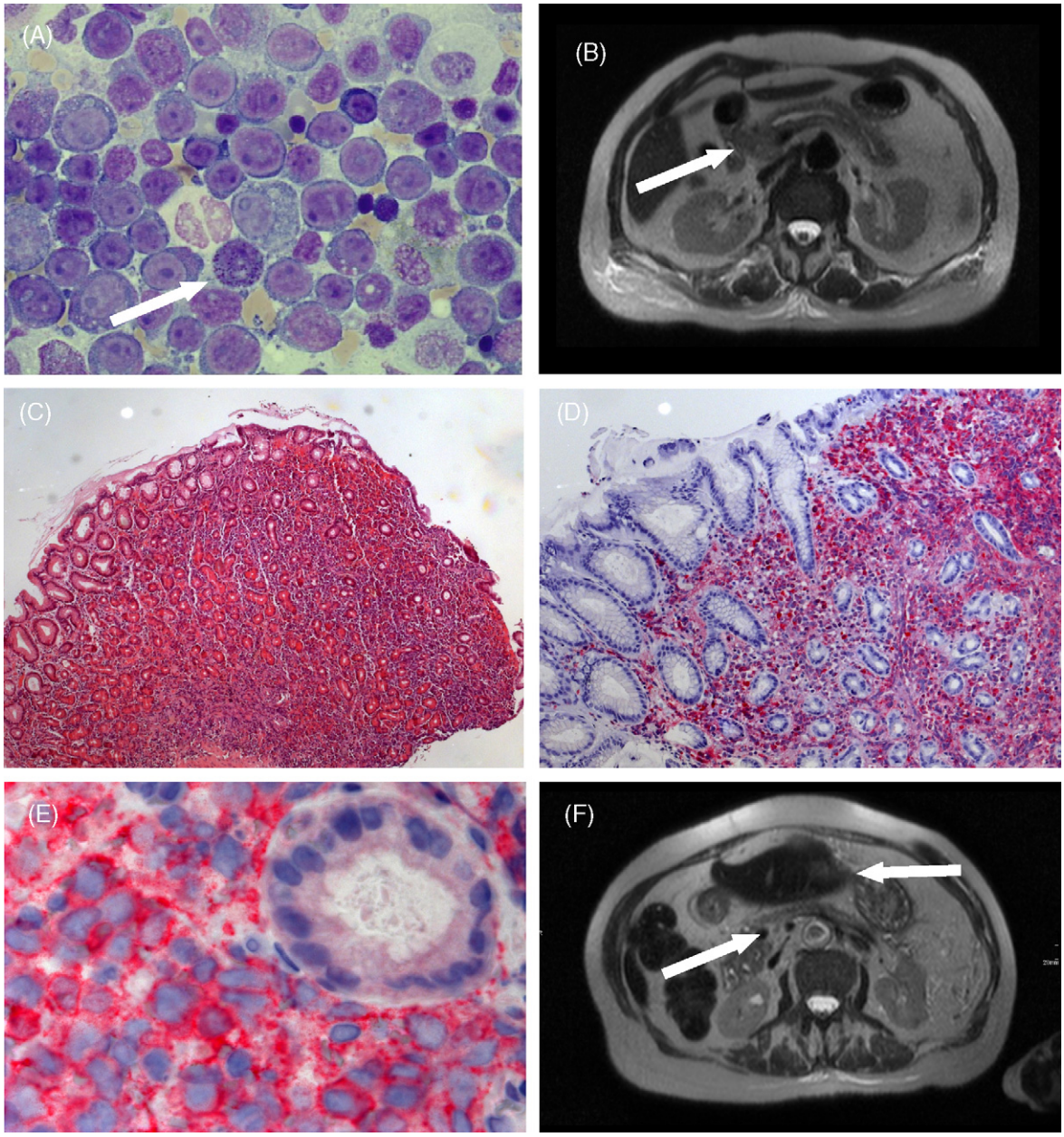

Fig. 1. (A) Cytology of bone marrow revealed acute myeloid leukemia (AML) of myelomonocytic subtype, arrow indicates abnormal eosinophilic precursors typical for M4eo. (B) Magnetic resonance images of the abdomen performed before induction chemotherapy, arrows indicate obstructive jaundice and a massively enlarged pancreatic duct caused by a diffuse infiltrating mass of the head of the pancreas, highly suspicious for pancreatic carcinoma. (C) Histopathologic demonstration of diffusely infiltrating monomorphic blasts in gastric mucosa biopsy disclosing granulocytic sarcoma (HE stain). (D) Granulocytic sarcoma: immunohistochemistry for myeloperoxidase. (E) Granulocytic sarcoma: immunohistochemistry for c-kit, note c-kit overexpression. (F) MRI of the abdomen performed 7 weeks after induction chemotherapy, left arrow indicates the normal pancreatic duct, the pre-existing mass in the head of the pancreas is undetectable. Right arrow indicates chronic liver hematoma (status post ERCP).

performance status until only weeks before diagnosis, a dose-adapted "MICE" induction chemotherapy (full-dose etoposide and cytarabine, attenuated-dose mitoxantrone with 3.5 instead of 7 mg/m^2 day 1,3,5) [1] was administered and overall well tolerated. Within 1 week, abdominal symptoms improved dramatically, and after 6 weeks the abdominal mass could not be detected anymore by MRI (Fig. 1F). Furthermore, CA 19-9, bilirubin and AP levels had normalized completely. Complete hematologic remission of AML was attained, albeit with persistence of the CBFß/MYH11 fusion transcript in the bone marrow. A retrospective analysis of genomic DNA extracted from the leukemic blasts revealed no c-kit mutations of exons 8, 9, 11, 13, and 17 and flanking sequences (data not shown), analyzed by PCR and sequencing as described [2]. One full-dose course of consolidation according to the "mini-ICE" protocol was administered with-