Atlas of Genetics and Cytogenetics in Oncology and Haematology

OPEN ACCESS JOURNAL AT INIST-CNRS

Case Report Section

Paper co-edited with the European LeukemiaNet

Translocation t(11;15)(q23;q14) detected in AML at first relapse

Elvira D Rodrigues Pereira Velloso, Silvia Helena Figueiredo, Cristina A Ratis, Ana Cláudia Brito, Nydia S Bacal, Yana AS Novis, Cristóvão LP Mangueira

Laboratorio clínico Hospital Israelita Albert Einstein, Av. Albert Einstein, 627/701 - Morumbi - Sao Paulo, Brazil (EDRPV), Hospital Sirio Libanes, Sao Paulo, Brazil (SHF), Hospital Sirio Libanes, Sao Paulo, Brazil (CAR, ACB, NSB, YASN, CLPM)

Published in Atlas Database: April 2008

Online updated version : http://AtlasGeneticsOncology.org/Reports/1115RodriguesID100034.html
DOI: 10.4267/2042/44464

Clinics

Age and sex
30 yearsmale patient.

Previous history
No preleukemia. Previous malignancy 17 months before (September, 2006) an AML-M6 "de novo" (FAB) was diagnosed. Immunophenotype study showed expression of CD117,CD34, HLA-DR, CD33, CD13, CD71, CD38, CD36 and CD11c, Bone Marrow karyotype showed clonal trisomy 21 (47,XY,+21[2]/46,XY[13]). The treatment included chemotherapy induction cycle with Idarrubicin and Ara-C (3+7) and consolidation with HDDAC. In April, 2007 a hematologic and immunophenotypic remission was observed, although a karyotype showed one methaphase with trisomies 13 and 21 (48,XY,+13,+21[1]/46,XY[19]. In October, 2007, cytometry and cytogenetic bone marrow studies showed complete remission. No inborn condition of note.

Organomegaly
No hepatomegaly, no splenomegaly, no enlarged lymph nodes, no central nervous system involvement.

Blood

WBC: 93X 10^9/l
HB: 9,8g/dl
Platelets: 40X 10^9/l
Blasts: 96%
Bone marrow: >90% blasts with myeloid features.

Cyto-Pathology Classification

Cytology: AML-M1
Immunophenotype: CD 45+ gate: CD117, CD34, HLA-DR, CD33, CD13, CD71, CD38, CD36, CD11c and cMPO.
Rearranged Ig Tcr: Not done.
Pathology: Not done.
Electron microscopy: Not done.
Diagnosis: AML in first relapse.

Survival

Date of diagnosis: 02-2008
Treatment: VP16/ Mitoxantrone/Ara-C
Complete remission: None.
Treatment related death: no
Relapse: no
Phenotype at relapse: -
Status: Alive. Last follow up: 09-2008
Survival: 7months

Karyotype

Sample: Bone marrow cells.
Culture time: 24 and 48 hs without stimulating agents.
Banding: G
Results: 46,XY,t(11;15)(q23;q14)[20]
Karyotype at Relapse: Not applied.

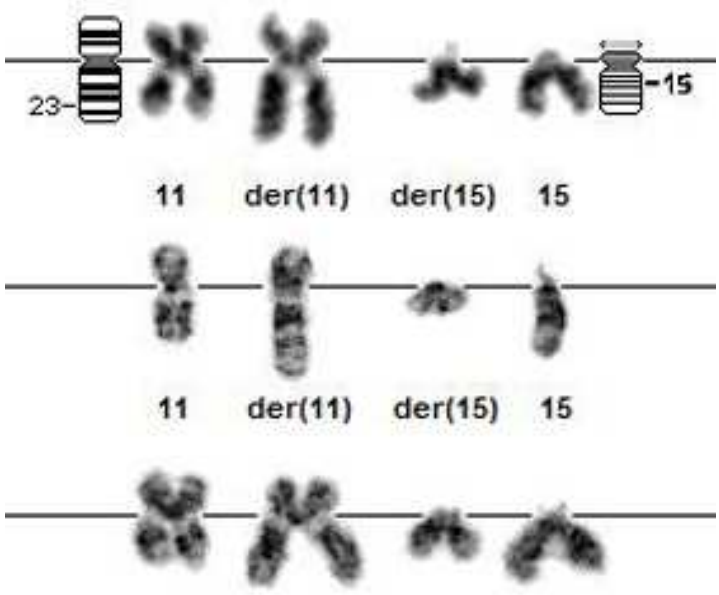
Other molecular cytogenetics technics:
FISH (bone marrow, LSI MLL Dual Color, Break Apart Rearrangement Probe, Vysis)
Other molecular cytogenetics results:
nuc ish(MLLx2)[100]

Other Molecular Studies

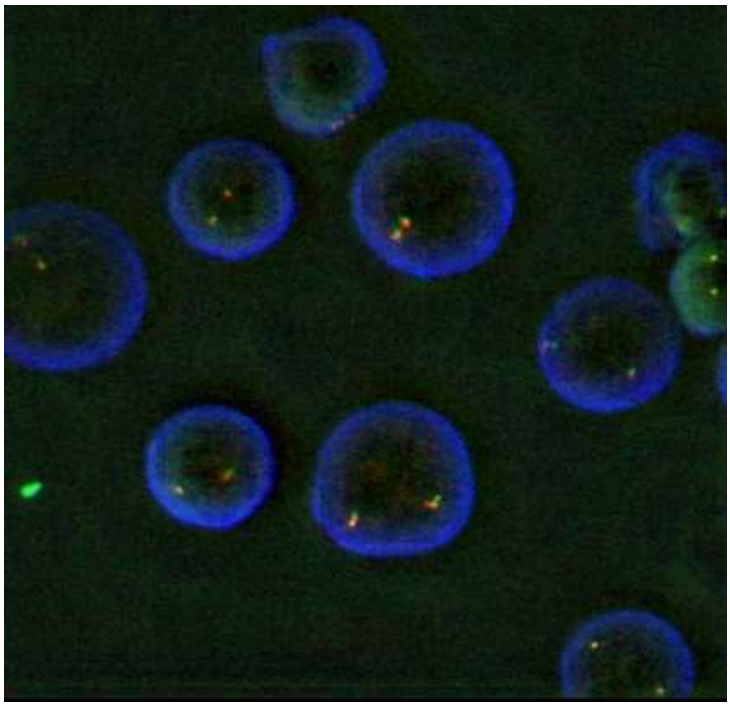
Technics:
Not done.

Comments

Translocation t(11;15)(q23;q14) have been described in few cases of acute leukemia, including ALL2 and AML 1,3,4,7.



Partial karyotypes- G-band- showing the t(11;15)(q23;q14) as the sole anomaly.



Interphase FISH using MLL Dual Color, Break Apart Rearrangement probe.
No MLL gene rearrangement was observed.

Although rare, molecular studies have demonstrated the diversity of this cytogenetic abnormality, and MLL gene rearrangement could be or not detected 2,5. When it is present, two different genes could be fused to MLL (AF15q14 and MPFVE) 6,7.

We described herein a t(11;15)(q23;q14) without MLL rearrangement in AML at first relapse. As this translocation was not detected at diagnosis, we could not discard the implication of previous chemotherapy in this cytogenetic abnormality.

References

Hunger SP, Tkachuk DC, Amylon MD, Link MP, Carroll AJ, Welborn JL, Willman CL, Cleary ML. HRX involvement in de novo and secondary leukemias with diverse chromosome 11q23 abnormalities. Blood. 1993 Jun 15;81(12):3197-203

Rubnitz JE, Link MP, Shuster JJ, Carroll AJ, Hakami N, Frankel LS, Pullen DJ, Cleary ML. Frequency and prognostic significance of HRX rearrangements in infant acute lymphoblastic leukemia: a Pediatric Oncology Group study. Blood. 1994 Jul 15;84(2):570-3.

Hernández JM, Mecucci C, Beverloo HB, Selleri L, Wlodarska I, Stul M, Michaux L, Verhoef G, Van Orshoven A, Cassiman JJ. Translocation (11;15)(q23;q14) in three patients with acute non-lymphoblastic leukemia (ANLL): clinical, cytogenetic and molecular studies. Leukemia. 1995 Jul;9(7):1162-6.

Tanaka K, Eguchi M, Eguchi-Ishimae M, Hasegawa A, Ohgami A, Kikuchi M, Kyo T, Asaoku H, Dohy H, Kamada N. Restricted chromosome breakpoint sites on 11q22-q23.1 and 11q25 in various hematological malignancies without MLL/ALL-1 gene rearrangement. Cancer Genet Cytogenet. 2001 Jan 1;124(1):27-35

Chinwalla V, Chien A, Odero M, Neilly MB, Zeleznik-Le NJ, Rowley JD. A t(11;15) fuses MLL to two different genes, AF15q14 and a novel gene MPFYVE on chromosome 15. Oncogene. 2003 Mar 6;22(9):1400-10

Kuefer MU, Chinwalla V, Zeleznik-Le NJ, Behm FG, Naeve CW, Rakestraw KM, Mukatira ST, Raimondi SC, Morris SW. Characterization of the MLL partner gene AF15q14 involved in t(11;15)(q23;q14). Oncogene. 2003 Mar 6;22(9):1418-24

Gameiro S, Boivin J, Canavarro MC, Moura-Ramos M, Soares I. Social nesting: changes in social network and support across the transition to parenthood in couples that conceived spontaneously or through assisted reproductive technologies. J Fam Psychol. 2010 Apr;24(2):175-87

This article should be referenced as such:

Rodrigues Pereira Velloso ED, Figueiredo SH, Ratis CA, Brito AC, Bacal NS, Novis YAS, Mangueira CLP. Translocation t(11;15)(q23;q14) detected in AML at first relapse. Atlas Genet Cytogenet Oncol Haematol. 2009; 13(4):333-335.