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Case Report Section

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A new case of t(1;11)(q21;q23) in a child with M1 ANLL

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Clinics

Age and sex

21 months old male patient.

Previous history

No preleukemia. No previous solid tumors. Inborn condition of note: Prematurity (borth at 33 weeks of gestation).

Organomegaly

No hepatomegaly, no splenomegaly, no enlarged lymph nodes.

Blood

WBC: 10.6X 10^9/l
HB: 7.1g/dl
Platelets: 71X 10^9/l
Blasts: 8%

Cyto-Pathology Classification

Cytology

Bone marrow: 84 % of blastic cells. Cytochemestry: peroxydase: 100% of positive blasts; butyrate esterase: positive in 11% of blasts.

Immunophenotype

CD13+,CD15+,CD65+,CD33+,CD117+, MPO+, MDR-, CD34-, CD36-, CD14-, CD4+, lineage B-, lineage T-.

Diagnosis

AML1 (FAB classification), LAM with 11q23 abnormalities (WHO classification).

Survival

Date of diagnosis: 04-2004

Treatment: Induction treatment including cytosine-arabinoside (200 mg/m_ D+1 to D+8) and mitoxantrone (12 mg /m_ D+1, D+2, D+3). One intrathecal injection (including methotrexate, steroids, and cytosine-arabinoside).

Complete remission: Yes
Relapse: no

Survival: 8 +months

Karyotype

Sample: Bone marrow

Culture time: 24/72 h

Banding: G and R banding

Results

46,XY,t(1;11)(q21;q23)[6]

Other molecular cytogenetics technics

Fluorescence in Situ Hybridization was performed using a MLL dual color, break apart rearrangement probe and a chromosome 1 specific labeled spectrum green painting probe (ABBOTT).

Other molecular cytogenetics results

Confirmation of MLL rearrangement by the t(1;11)(q21;q23).

Other Molecular Studies

Results:

MLL multiplex PCR [t(4;11), t(6;11), t(9;11), t(10;11), t(11;19)]: negative. ETO/AML1: negative. MYH11/CBFB: negative. FLT3 mutations research: negative.

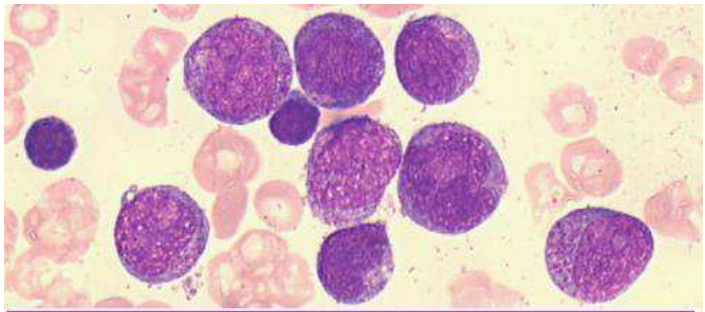

Figure 1 : Bone marrow (MGG stained) : Myeloblasts with numerous azurophilic granulation and proeminent nucleus.

Bone marrow (MGG staining).

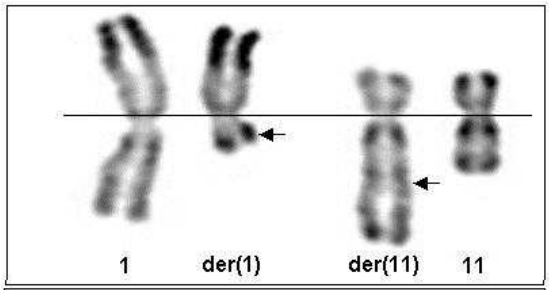

Figure 2 : Partial karyotype (R bands) showing the t(1;11)(q21;q23).

Partial karyotype showing the t(1;11)(q21;q23)(R bands).

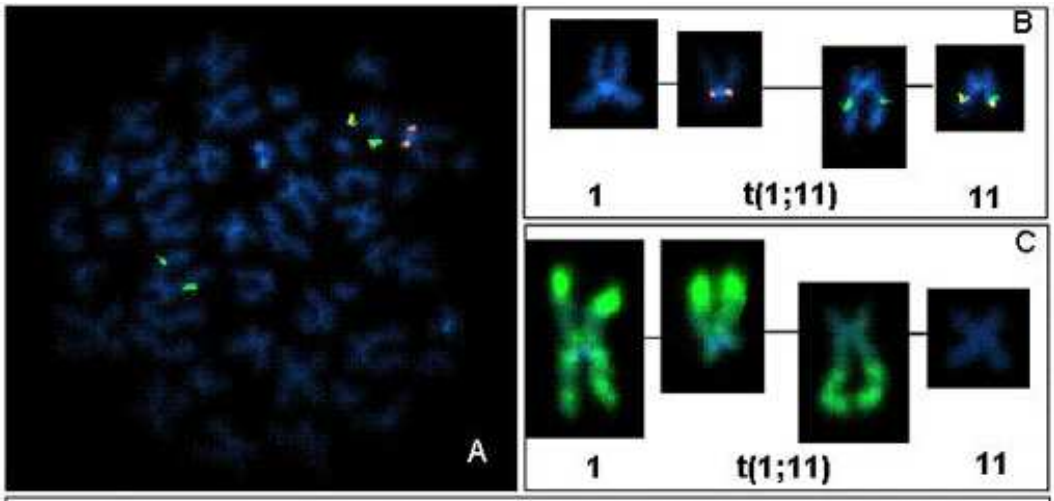

Figure 3 : FISH using MLL break apart probe (A,B) and WCP 1 probe (C) : partial karyotype results

FISH results.

Other Findings

Note:

Meningeal punction: no blastic cells infiltration.

Comments

To our knowledge, 26 cases of translocation t(1;11)(q21;q23) (involved the genes AF1q (1q21) and MLL(11q23) have already been described in the literature. All cases were acute leukemia except for one secondary myelodysplastic syndrome. In 14 cases (57 %), the translocation was the sole abnormality. The other 12 cases showed additional chromosomal abnormalities. This rare translocation is preferentially associated with AML4, AML5, or biphenotypic leukemia of infants or children. Only one case of AML M1/M2 in a 3-year-old female was reported with t(1;11)(q21;q23) as the sole karyotypic change. We present here the second case of AML1 with t(1;11)(q21;q23). The chid is in complete remission at 6 months after diagnosis.

References

Mitelman F, Johansson B, Mertens F. Mitelman Database of Chromosome Aberrations in Cancer. http://cgap.nci.nih.gov/Chromosomes/Mitelman

Busson-Le Coniat M, Salomon-Nguyen F, Hillion J, Bernard OA, Berger R. MLL-AF1q fusion resulting from t(1;11) in acute leukemia. Leukemia. 1999 Feb;13(2):302-6

Meloni-Balliet AM, Morgan R, Piatt J, Sandberg AA. Translocation t(1;11)(q21;q23), a new subgroup within M4 acute nonlymphocytic leukemia. Cancer Genet Cytogenet. 1989 Feb;37(2):269-71

Tse W, Zhu W, Chen HS, Cohen A. A novel gene, AF1q, fused to MLL in t(1;11) (q21;q23), is specifically expressed in leukemic and immature hematopoietic cells. Blood. 1995 Feb 1;85(3):650-6

Harrison CJ, Cuneo A, Clark R, Johansson B, Lafage-Pochitaloff M, Mugneret F, Moorman AV, Secker-Walker LM. Ten novel 11q23 chromosomal partner sites. European 11q23 Workshop participants. Leukemia. 1998 May;12(5):811-22

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