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Case Report Section

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A new case of t(8;14)(q11;q32) in an acute lymphoblastic leukemia

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Clinics

Age and sex
13 years old male patient.

Previous history
No preleukemia ; No previous malignancy ; No inborn condition of note

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

Blood

WBC: 21X 10^9/l
HB: 9.1g/dl
Platelets: 32X 10^9/l
Blasts : 79%
Bone marrow: 97%

Cyto-Pathology Classification

Cytology
Neutrophils: 11 %; eosinophils: 0 %; basophils : 0%; lymphocytes : 9 %; monocytes : 1%

Immunophenotype
HLA DR+ (high), CD34+ (high), CD10+ (low), CD19+ (high), c mu -, CD79a+ (high). Blasts were myeloperoxydase negative.

Diagnosis
Diagnosis of precursor B-cell acute lymphoblastic leukemia (WHO classification), LAL-B II (EGIL classification).

Survival

Date of diagnosis: 04-2003, complete remission.

Karyotype

Sample: Blood and bone marrow.

Culture time: Overnight unstimulated culture.

Banding: R-

Results:
45, X, - Y, t(8;14)(q11;q32) [16] / 46, XY [4]

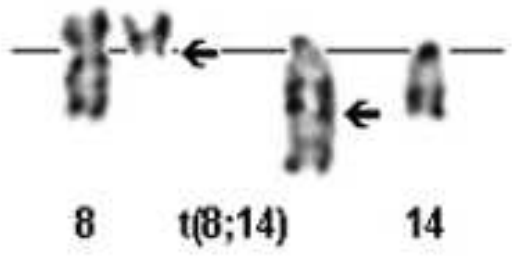

Figure 2: Karyotype (R-bands) : 45, X, -Y, t(8;14)(q11;q32).

Other molecular cytogenetics technics:
1- Fluorescence in situ hybridization (FISH) was performed using a probe specific for the IgH locus (14q32) and a chromosome 8 specific labelled Spectrum Orange painting probe (Abott) according to the manufacturer's instructions. FISH confirmed translocation t (8;14)(q11;q32) and reveals an IgH rearrangement (Figure 3).

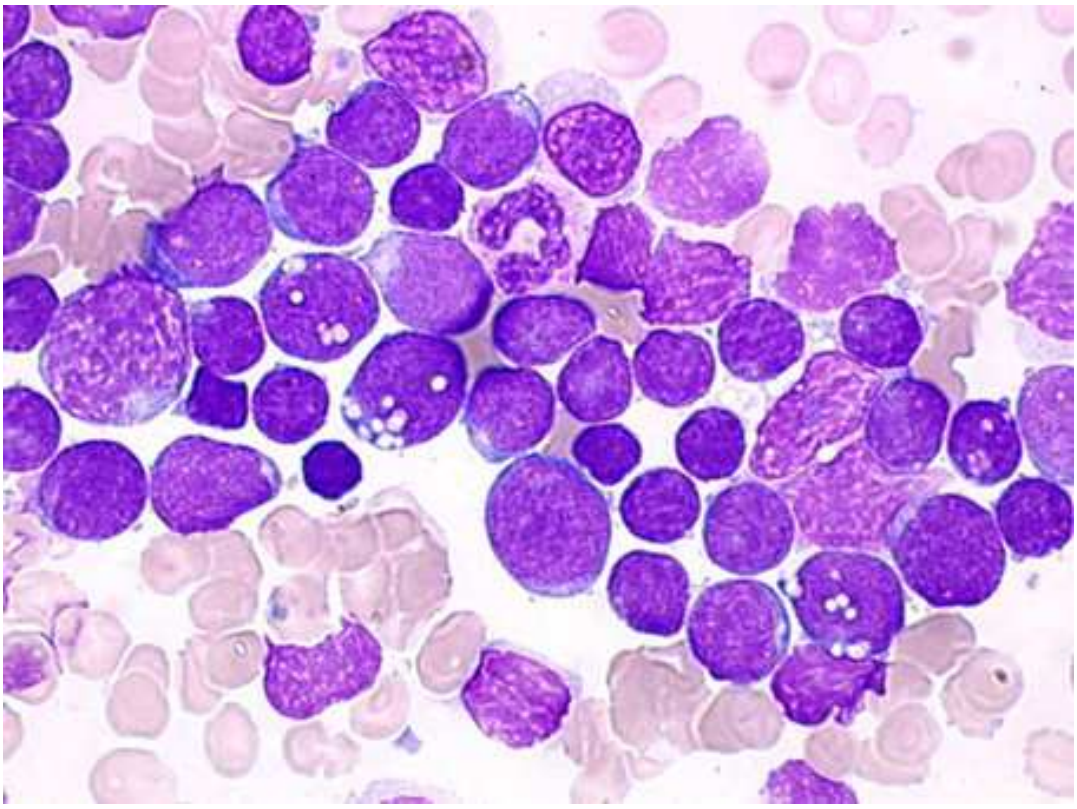

Figure 1: Bone marrow (MGG-stained) x 50: Increased cellularity, no megakaryocyte. Blasts : 97 % ; Neutrophils : 3%.

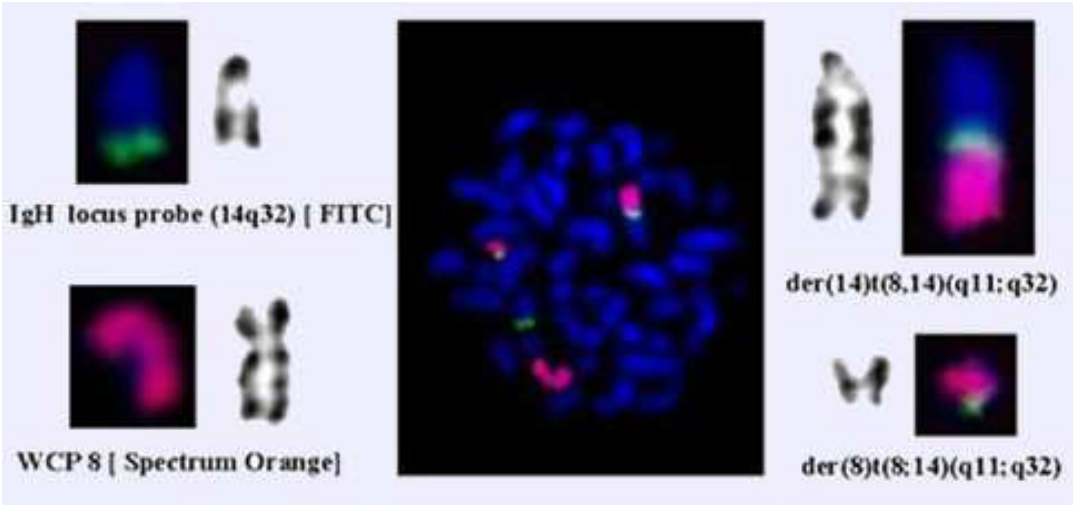

Figure 3: Fluorescence in situ hybridization using WCP 8 probe (Spectrum Orange) and LSI-IgH locus probe (FITC): partial karyotype results (R-banding and FISH).

2- FISH was performed using a chimeric X/Y direct labelled coktail probe (Qbiogene) according to the manufacturer's instructions. FISH confirmed the loss of chromosome Y in 90% on interphase cells (data not shown).

Other Molecular Studies

Results:
BCR/ABL: negative
TEL /AML1: negative
MLL gene : no rearrangement

Comments

To our knowledge, the number of t(8;14)(q11;q32) cases reported in the literature is 44. In 10 cases, it was the sole acquired abormality. In 34 cases, the t(8;14)(q11;q32) is associated with others numerical or structural abnormalities. 12 patients showed a constitutional trisomy 21. This case, an eleven year old boy represents an additional case. He does not present

Down syndrome (this association is further strengthened). Using EGIL classification, bone marrow immunophenotypage classified this case as a common ALL (negative c mu and CD10 positive expression though a low level). It is the first report showing association of a t(8 ;14)(q11 ;q32) and loss of chromosome Y.

Splitting of the IgH gene was demonstrated in our case by FISH technique. As in translocations described in leukemias and lymphomas implicating the locus 14q32, the rearrangement could be crucial in this leukemic event.

The breakpoint at 8q11 has not yet been cloned.

References

Bene MC, Castoldi G, Knapp W, Ludwig WD, Matutes E, Orfao A, van't Veer MB. Proposals for the immunological classification of acute leukemias. European Group for the Immunological Characterization of Leukemias (EGIL). Leukemia. 1995 Oct;9(10):1783-6

Harris NL, Jaffe ES, Diebold J, Flandrin G, Muller-Hermelink HK, Vardiman J, Lister TA, Bloomfield CD. World Health Organization classification of neoplastic diseases of the hematopoietic and lymphoid tissues: report of the Clinical Advisory Committee meeting-Airlie House, Virginia, November 1997. J Clin Oncol. 1999 Dec;17(12):3835-49

Kaleem Z, Shuster JJ, Carroll AJ, Borowitz MJ, Pullen DJ, Camitta BM, Zutter MM, Watson MS. Acute lymphoblastic leukemia with an unusual t(8;14)(q11.2;q32): a Pediatric Oncology Group Study. Leukemia. 2000 Feb;14(2):238-40

Moore S, Suttle J, Bain S, Story C, Rice M. Acute lymphoblastic leukemia characterized by t(8;14)(q11.2;q32). Cancer Genet Cytogenet. 2003 Feb;141(1):1-4

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