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Case Report Section

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A new case of t(5;14)(q31;q32) in a pediatric acute lymphoblastic leukemia presenting with hypereosinophilia

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Clinics

Age and sex
11 years old male patient.

Previous history
Preleukemia. The patient presented with a chronic eosinophilic leukemia 3 months before developing ALL. No previous malignancy. No inborn condition of note

Organomegaly
Hepatomegaly (4 cm from below costal rib), splenomegaly (3 cm from below costal rib), no enlarged lymph nodes , no central nervous system involvement.

Blood

WBC : 48 with 62% of eosinophils X 10^9/l
HB : 7.0g/dl
Platelets : 79 X 10^9/l
Blasts : 15%
Bone marrow : Normal cellularity was replaced by 60% of lymphoblasts FAB L1 morphology%.

Cyto-Pathology Classification

Immunophenotype
Pre-B ALL (EGIL classification B III).
The blasts expressed CD45, CD19, CD10, CD34, HLA-DR, cCD79a, cCD22, Tdt and cytoplasmic micro chain, partial CD20 and CD33 and were negative for CD2, CD7, CD13, CD15, CD117 and CD3.

Diagnosis
Acute lymphoblastic leukemia following a chronic eosinophilic leukemia.

Survival

Date of diagnosis: 03-2008

Treatment: Chemotherapy for ALL (12-ALLIC 02 protocol)
Complete remission was obtained.
Treatment related death : no
Relapse : yes

Phenotype at relapse
During continuation phase hypereosinophilia was observed in peripheral blood, but low percentage of lymphoblasts was detected during 2-3 weeks before relapse. After this finding, the patient presented CNS infiltration by eosinophils (70% of WBC detected in CSF). He presented a bone marrow infiltration by dysplastic eosinophils and less than 5% of lymphoblasts after 18 months from achieving CR and a hematological relapse was diagnosed.

Status: Death 06-2010

Survival: 21 months

Karyotype

Sample: Bone marrow

Culture time: 24h

Banding: G banding

Results

Karyotype at time of diagnosis of ALL: 46,XY,t(5;14)(q31;q32)[4]/46,XY[12]

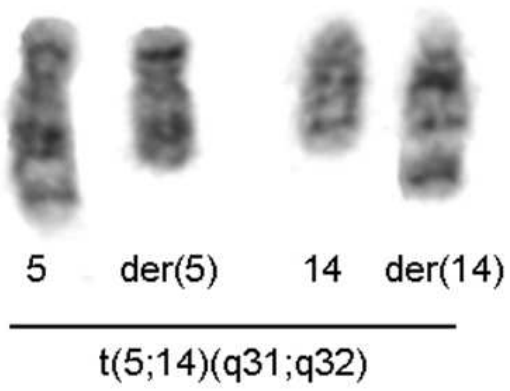
Karyotype at Relapse

46,XY,t(3;8)(p21;q24),t(5;14)(q31;q32)[2]/46,XY[18]

Other Molecular Studies

Technics:

RT-PCR non evaluable, due to control gene non amplifiable.



Partial GTG banded karyotype showing t(5;14)(q31;q32).

Comments

To our knowledge nine cases (8M/1F) of ALL with eosinophilia and t(5;14)(q31;q32) have been reported in the literature. Five of them were described in childhood ALL. The prognosis of t(5;14)(q31;q32) seems to be very poor. Our patient relapsed and died 21 months after diagnoses.

References

Tono-oka T, Sato Y, Matsumoto T, Ueno N, Ohkawa M, Shikano T, Takeda T. Hypereosinophilic syndrome in acute lymphoblastic leukemia with a chromosome translocation [t(5q;14q)]. Med Pediatr Oncol. 1984;12(1):33-7

Hogan TF, Koss W, Murgo AJ, Amato RS, Fontana JA, VanScoy FL. Acute lymphoblastic leukemia with chromosomal 5;14 translocation and hypereosinophilia: case report and literature review. J Clin Oncol. 1987 Mar;5(3):382-90

McConnell TS, Foucar K, Hardy WR, Saiki J. Three-way reciprocal chromosomal translocation in an acute lymphoblastic leukemia patient with hypereosinophilia syndrome. J Clin Oncol. 1987 Dec;5(12):2042-4

Baumgarten E, Wegner RD, Fengler R, Ludwig WD, Schulte-Overberg U, Domeyer C, Schüürmann J, Henze G. Calla-positive acute leukaemia with t(5q;14q) translocation and hypereosinophilia--a unique entity? Acta Haematol. 1989;82(2):85-90

Grimaldi JC, Meeker TC. The t(5;14) chromosomal translocation in a case of acute lymphocytic leukemia joins the interleukin-3 gene to the immunoglobulin heavy chain gene. Blood. 1989 Jun;73(8):2081-5

Fishel RS, Farnen JP, Hanson CA, Silver SM, Emerson SG. Acute lymphoblastic leukemia with eosinophilia. Medicine (Baltimore). 1990 Jul;69(4):232-43

Meeker TC, Hardy D, Willman C, Hogan T, Abrams J. Activation of the interleukin-3 gene by chromosome translocation in acute lymphocytic leukemia with eosinophilia. Blood. 1990 Jul 15;76(2):285-9

Chen Z, Morgan R, Sandberg AA. Non-random involvement of chromosome 5 in ALL. Cancer Genet Cytogenet. 1992 Jul 1;61(1):106-7

Heerema NA, Palmer CG, Weetman R, Bertolone S. Cytogenetic analysis in relapsed childhood acute lymphoblastic leukemia. Leukemia. 1992 Mar;6(3):185-92

Knuutila S, Alitalo R, Ruutu T. Power of the MAC (morphology-antibody-chromosomes) method in distinguishing reactive and clonal cells: report of a patient with acute lymphatic leukemia, eosinophilia, and t(5;14). Genes Chromosomes Cancer. 1993 Dec;8(4):219-23

Gmidène A, Sennana H, Elghezal H, Ziraoui S, Youssef YB, Elloumi M, Issaoui L, Harrabi I, Raynaud S, Saad A. Cytogenetic analysis of 298 newly diagnosed cases of acute lymphoblastic leukaemia in Tunisia. Hematol Oncol. 2008 Jun;26(2):91-7

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