

Leukaemia Section

Short Communication

t(2;19)(p23;p13) TPM4/ALK

Jean-Loup Huret

Genetics, Dept Medical Information, University of Poitiers, CHU Poitiers Hospital, F-86021 Poitiers, France (JLH)

Published in Atlas Database: January 2013

Online updated version : <http://AtlasGeneticsOncology.org/Anomalies/t0219p23p13ID1549.html>
DOI: 10.4267/2042/49704

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 2.0 France Licence.
© 2013 Atlas of Genetics and Cytogenetics in Oncology and Haematology

Clinics and pathology

Disease

Anaplastic large cell lymphoma (ALCL)

Clinics

Only one case to date, an 18-month-old boy with a null-ALCL (Meech et al., 2001).

Cytology

Cells expressed both myeloid (CD13, CD33, HLA-DR) and natural killer (CD3-/CD56+, germline TCR genes, CD25+/CD122+/granzyme B+) cell antigens.

Evolution

The patient was in remission 14 months after completion of therapy.

Cytogenetics

Cytogenetics morphological

To be noted is that an identical t(2;19)(p23;p13), also involving TPM4 and ALK, has been found in a case of inflammatory myofibroblastic tumor (Lawrence et al., 2000).

A pre-B cell acute leukemia was described with a t(9;12)(q22;p13) and ETV6 rearrangement, and also a t(2;19)(p23;p13) (Pérez-Vera et al., 2005).

It is likely that this translocation t(2;19)(p23;p13) is different at the molecular level.

Genes involved and proteins

ALK

Location

2p23.2

Protein

1620 amino acids; ALK is a membrane associated tyrosine kinase receptor of the insulin receptor superfamily.

TPM4

Location

19p13.12

Protein

248 amino acids; tropomyosins are actin-binding proteins; component of cytoskeletal microfilaments; role in the calcium dependent regulation of striated muscle.

Result of the chromosomal anomaly

Hybrid gene

Description

5'TPM4-3'ALK. Fusion between TPM4 nucleotide 714 and ALK nucleotide 4084.

References

Lawrence B, Perez-Atayde A, Hibbard MK, Rubin BP, Dal Cin P, Pinkus JL, Pinkus GS, Xiao S, Yi ES, Fletcher CD, Fletcher JA. TPM3-ALK and TPM4-ALK oncogenes in inflammatory myofibroblastic tumors. *Am J Pathol*. 2000 Aug;157(2):377-84

Meech SJ, McGavran L, Odom LF, Liang X, Meltesen L, Gump J, Wei Q, Carlsen S, Hunger SP. Unusual childhood extramedullary hematologic malignancy with natural killer cell properties that contains tropomyosin 4--anaplastic lymphoma kinase gene fusion. *Blood*. 2001 Aug 15;98(4):1209-16

Pérez-Vera P, Montero-Ruiz O, Frías S, Ulloa-Avilés V, Cárdenas-Cardós R, Paredes-Aguilera R, Rivera-Luna R, Carnevale A. Detection of ETV6 and RUNX1 gene rearrangements using fluorescence in situ hybridization in Mexican patients with acute lymphoblastic leukemia: experience at a single institution. *Cancer Genet Cytogenet*. 2005 Oct 15;162(2):140-5

This article should be referenced as such:

Huret JL. t(2;19)(p23;p13) TPM4/ALK. *Atlas Genet Cytogenet Oncol Haematol*. 2013; 17(5):344-345.
