

Leukaemia Section

Short Communication

t(1;2)(q25;p23)

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Published in Atlas Database: August 2001

Online updated version : <http://AtlasGeneticsOncology.org/Anomalies/t0102ID1168.html>
DOI: 10.4267/2042/37788

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Clinics and pathology

Disease

Anaplastic large cell lymphoma: translocations involving 2p23 are found in more than half cases of anaplastic large cell lymphoma (ALCL), a high grade non Hodgkin lymphoma (NHL). They involve ALK, and are therefore called ALK+ ALCL.

The most frequent ALK+ ALCL being the the t(2;5)(p23;q35) with NPM1 -ALK fusion protein, which localises both in the cytoplasm and in the nucleus.

The t(1;2)(q25;p23) is very rare., and, like other t(2;Var) involving various partners and ALK, the fusion protein has a cytoplasmic localization; they are therefore called "cytoplasm only" ALK+ ALCL.

Epidemiology

A very few (four) cases known so far.

Clinics

ALK+ ALCL without the t(2;5) (so called cytoplasmic only ALK cases) show clinical features similar to those of classical ALK+ ALCL: young age, male predominance, presentation with advanced disease, systemic symptoms, frequent involvement of extranodal sites, and a good prognosis. Nothing in particular is known concerning t(1;2) cases, as cases are not documented.

Cytogenetics

Complex karyotypes and/or hidden translocation in the 2 cases with cytogenetic data; FISH analyses are essential.

Disease

Inflammatory myofibroblastic tumors.

Clinics

Rare soft tissue tumour found in children and young adults.

Pathology

Spindle cell proliferation with myofibroblastic differentiation and an inflammatory infiltrate.

Prognosis

Low malignant potential and good prognosis.

Genes involved and proteins

TPM3 (tropomyosin alpha chain)

Location

1q25

Protein

284 amino acids, 33 kDa; coiled coil structure; role in Calcium dependant actin-myosin interaction.

ALK

Location

2p23

Protein

1620 amino acids; 177 kDa; glycoprotein (200 kDa mature protein) ; membrane associated tyrosine kinase receptor.

Result of the chromosomal anomaly

Hybrid gene

Description

5' TPM3 - 3' ALK.

Fusion protein

Description

104 kDa ; 221 (?) N-term amino acids from TPM3 fused to the 562 C-term amino acids from ALK (i.e. the entire cytoplasmic portion of ALK with the tyrosine kinase domain); homodimerization of the fusion protein.

Expression / Localisation

Cytoplasmic localisation (in contrast with the t(2;5)(p23;q35) with NPM1-ALK, which localizes both in the cytoplasm and in the nucleus).

Oncogenesis

TPM3-ALK is constitutively activated.

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This article should be referenced as such:

Huret JL. t(1;2)(q25;p23). *Atlas Genet Cytogenet Oncol Haematol.* 2001; 5(4):281-282.
