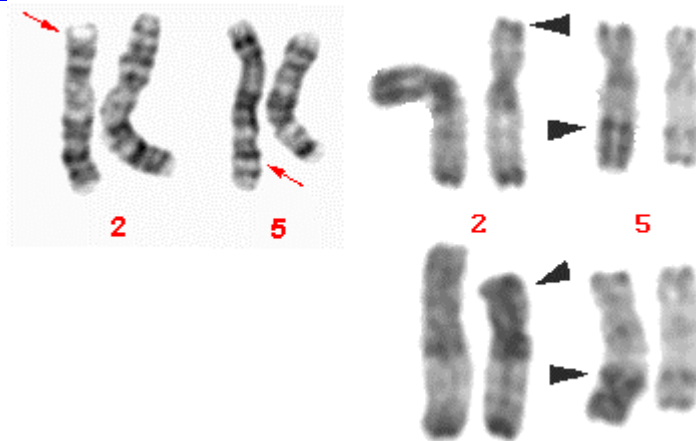


t(2;5)(p23;q35)

Identity



t(2;5)(p23;q35) G-banding (left), and R- banding (right) - Courtesy Jean-Luc Lai and Alain Vanderhaegen

Clinics and Pathology

| | |
|------------------------------|---|
| Disease | 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 t(2;5) is the far most frequent 2p23 translocation in ALK+ ALCL. |
| Phenotype / cell stem origin | T-cell in 80% (or 100%?), or null-cell type; B-cell cases, if they exist, would represent cases of large B-cell lymphomas; CD30+; present with some overlapping features with Hodgkin's disease: CD30 positivity and Reed-Sternberg like cells, but the t(2;5) is not found in Hodgkin's disease (it has long been debated) |
| Epidemiology | 10% of NHL; found in children and young adults; median around 16 yrs) |
| Clinics | involve lymph nodes and extra nodal sites such as lungs and gastro intestinal tract |
| Cytology | t(2;5) is found in about 30-50% of anaplastic large cell NHL (also called ALCL); it was thought previously that the t(2;5) could be found in diffuse large cell NHL or immunoblastic NHL; however, cases may easily be misdiagnosed, as the malignant cells display a pleomorphic appearance |
| Prognosis | although t(2;5) is found in aggressive high grade tumours, a 80% five yr survival seems to be associated with this anomaly |

Cytogenetics

| | |
|----------------------|--|
| Additional anomalies | sole anomaly in less than 20% of cases; often part of a complex karyotype, with various structural and/or numerical anomalies; recurrent numerical anomalies are: +7, found in 20% of cases, +9, and +X, in 5 to |
|----------------------|--|

Variants 10% of cases.
closely related anomalies, also found in anaplastic large cell lymphoma, are: [t\(X;2\)\(q11;p23\)](#), [t\(1;2\)\(q25;p23\)](#), [inv\(2\)\(p23q35\)](#), [t\(2;3\)\(p23;q21\)](#), [t\(2;17\)\(p23;q23\)](#), [t\(2;19\)\(p23; p13.1\)](#) and [t\(2;22\)\(p23;q11.2\)](#). They all involve ALK in 2p23.

Genes involved and Proteins

Gene Name [ALK](#)

Location 2p23

Protein after glycosylation, produces a glycoprotein; membrane associated tyrosine kinase receptor

Gene Name [NPM1](#)

Location 5q35

Protein nuclear localisation; RNA binding nucleolar phosphoprotein involved in preribosomal assembly

Result of the chromosomal anomaly

Hybrid

gene 5' NPM-3' ALK on der(5)

Description

Transcript 2.4 kb

Fusion Protein 80 kDa; 680 amino acids; the 116 N-term aminoacids from NPM are fused to the 563 C-term ¾aminoacids of ALK (i.e. composed of the oligomerization domain and the metal binding site of NPM1, and the entire cytoplasmic portion of ALK); no apparent expression of the ALK/NPM1 counterpart. Characteristic localisation both in the cytoplasm and in the nucleus, due to heterooligomerization of NPM-ALK and normal NPM whereas the normal NPM protein is confined to the nucleus; constitutive activation of the catalytic domain of ALK.

Oncogenesis via the kinase function activated by oligomerization of NPM-ALK mediated by the NPM part

External links

Other database [t\(2;5\)\(p23;q35\)](#) [Mitelman database \(CGAP - NCBI\)](#)

Other database [t\(2;5\)\(p23;q35\)](#) [CancerChromosomes \(NCBI\)](#)

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