Leukaemia Section
Mini Review

**inv(3)(q21q26)**
**t(3;3)(q21;q26)**
**ins(3;3)(q26;q21q26)**

Jean-Loup Huret
Genetics, Department of Medical Information, University of Poitiers, CHU Poitiers Hospital, F-86021 Poitiers, France
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**Identity**

*Note:* the three chromosome anomalies are variants of each other, and they share identical features.

inv(3)(q21q26) G-banding (top) - Courtesy Diane H. Norback, Eric B. Johnson, Sara Morrison-Delap Cytogenetics at the Waisman Center (left and middle) and Jean-Luc Lai and Alain Vanderhaeghen, bottom: t(3;3)(q21;q26) (bottom) G-banding (left) - Courtesy Diane H. Norback, Eric B. Johnson, Sara Morrison-Delap (left and center left), Jean-Luc Lai and Alain Vanderhaeghen (middle), and R-banding (middle right and right) - Courtesy Christiane Charrin.
Clinics and pathology

Disease
Acute non lymphocytic leukemia (ANLL), often preceded by myelodysplastic syndrome (MDS); MDS; may occur as additional anomaly in chronic myelogenous leukemia (CML) with t(9;22), with thrombocytosis, often at the time of the blast crisis; has also been found in other myeloproliferative disorders.

Phenotype / cell stem origin
ANLL of various subtypes (M1, M2, M4, M6, M7); MDS; often RAEB; an early stem cell, prior to lineage commitment, is implicated.

Epidemiology
1M/1F; median age is 50 yrs.

Clinics
Blood data: elevated or normal (instead of low) platelets count; bone marrow: erythroid and megakaryocytic dysplasia, with micromegakaryocytes with hypolobulated nuclei.

Cytology
CD34+, CD13+, CD33+, DR+, but also, coexpression of the T-cell characteristic CD7+, showing the multilineage involvement.

Prognosis
Median survival (from 66 cases herein reviewed) is only 4 mths.

Cytogenetics

Additional anomalies
- Alone or with -7 in 30% of cases each;
- inv(3) can be an additional anomaly to t(9;22)(q34;q11)(20%), but, also, t(9;22) has been found additional to inv(3)!
- del(5q)(10%).

Genes involved and Proteins

EVI1
Location: 3q26

RPN1 (ribophorin 1)
Location: 3q21

Results of the chromosomal anomaly

Hybrid gene
Description
RPN1 enhancer juxtaposed to EVI1.

References

This article should be referenced as such: