Leukaemia Section
Short Communication

9p Rearrangements in ALL
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Published in Atlas Database: August 1999
Online updated version : http://AtlasGeneticsOncology.org/Anomalies/9prearrALLID1156.html
DOI: 10.4267/2042/37541
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Cytogenetics

Cytogenetics morphological
Various aberrations result in an abnormal 9p; these include monosomy 9, del(9p), add(9p), der(9p)t(V;9)(V;p), dic(V;9)(V;p), i(9q) and balanced translocations with 9p breakpoints; dicentric chromosomes in ALL nearly always involve a chromosome 9; an abnormal 9p usually occurs as part of a more complex karyotype; it occurs as a sole aberration in less than 10% of cases with an abnormal 9p.

Additional anomalies
Additional anomalies are frequent; an abnormal 12p is particularly frequent (16% of cases), and a deletion of 6q is also frequent (11% of cases).

Genes involved and proteins

Note
The different types of 9p aberrations may have different molecular consequences; when a deletion of 9p occurs, the genes involved could be MTS1 / CDK4I / p16INK4A (CDKN2) and MTS2 / p15INK4B (CDKN2B); these are believed to be tumor suppressor genes, and loss of heterozygosity occurs more frequently than cytogenetic deletions of 9p; however, mutation of the remaining allele is infrequent, and methylation changes may cause inactivation of the remaining allele.

Clinics and pathology

Disease
Acute lymphocytic leukemia (ALL).

Phenotype/cell stem origin
Lack of specificity for a particular immunophenotype.

Epidemiology
Approximately 10% of childhood ALL, similar in adult ALL.

Prognosis
Recent data indicate that an abnormal 9p is an adverse risk factor for B-lineage, but not T-lineage pediatric patients; this is more pronounced in standard-risk patients (age 1 - 9 years with WBC count <50 X 10^9/l); a dic(9;12)(p11-13;p11-12) has been reported to have a very low relapse rate.
References


This article should be referenced as such: