

t(5;17)(q35;q21)

Clinics and Pathology

Disease	acute non lymphocytic leukemia (ANLL)
Phenotype / cell stem origin	acute promyelocytic leukemia (ANLL-M3 according to the FAB classification)
Etiology	exceptional; only 2 well documented cases
Clinics	both patients were pediatric cases: F/2.5yrs, M/12yrs; disseminated intravascular coagulation at diagnosis in one case; remission obtained with chemotherapy and/or ATRA; first relapse at 7 and 5 months respectively
Cytology	hypergranular and hypogranular bilobed promyelocytes; absence of Auer rods; typical microspeckled pattern with anti-RARa antibodies; terminal differentiation of blasts and promyelocytes in vitro with ATRA
Prognosis	probably unfavorable (both patients had a short term first relapse)

Cytogenetics

Probes	RARa probe commercially available coupled with PML probe in dual color kits; non commercialized probes for NPM, previously used for t(2;5)(p23;q35) of anaplastic large cell lymphoma (same breakpoint into NPM) = cosmid clones 13, 15-2 and 47C12 retained by der(5)
Additional anomalies	one of the two cases had complex additional abnormalities
Variants	t(15;17)(q22;q21) t(11;17)(q23;q21) t(11;17)(q13;q21)

Genes involved and Proteins

Gene Name	NPM1
Location	5q35
Protein	gene for the nucleolar phosphoprotein nucleophosmin; would participate in ribosome assembly
Gene Name	RARa
Location	17 q21
Protein	gene for the retinoic acid receptor alpha; the breakpoint lies within the second intron of the gene, as in t(15;17) and t(11;17) translocations

Result of the chromosomal anomaly

Hybrid gene two reciprocal fusion genes are generated: 5'-NPM + 3'- RARa on der(5) and 5'-RARa + 3'-NPM on der(17); both fusion genes are transcribed, the crucial one is NPM-RARa; two NPM-RARa chimeric cDNAs are generated, one short and one long differing from 129 bp, with corresponding transcripts of 2.3 and 2.4 kb (alternatively spliced transcripts); in one case, only the short NPM-RARa isoform could be detected; the 5' end of NPM-RARa cDNAs contains the first 442 bp of the NPM cDNA; the 3' end contains RARa sequences of exon 3 through the 3' end of RARa; a reciprocal RARa-NPM transcript is detected: RARa exons 1 and 2 are fused to 3' NPM downstream bp 443

Description

Detection nested RT-PCR

Fusion Protein two NPM-RARa proteins, of 563 and 520 amino acids, are encoded (MW 62 and 57 kDa); NPM-RARa fusion protein acts as a retinoic acid-responsive transcriptional activator: increase of activity in a concentration dependant manner

Description

External links

Other database [t\(5;17\)\(q35;q21\)](#) [Mitelman database \(CGAP - NCBI\)](#)

Other database [t\(5;17\)\(q35;q21\)](#) [CancerChromosomes \(NCBI\)](#)

To be noted

Additional cases are needed to delineate the epidemiology of this rare entity:
you are welcome to submit a paper to our new [Case Report section](#).

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