

t(6;14)(p21;q32)

Clinics and Pathology

Disease	t(6;14)(p21.1;q32.3) is mainly multiple myeloma / plasma cell leukaemia , but also observed in diffuse large B cell non Hodgkin lymphoma (DLBCL) and marginal zone B cell lymphoma .
Phenotype / cell stem origin	mature B-lymphocyte
Epidemiology	Approximately 4% of primary MM cases. MGUS? Should be rather frequent in lymphoma but not yet systematically estimated.
Cytology	CD138+ dystrophic or not dystrophic plasma cells in MM; CD5+ diffuse large B cell lymphoma and splenic lymphoma with villous lymphocytes in NHL.
Prognosis	No prognosis value clearly established.

Cytogenetics

Cytogenetics Morphological	May be not easy to detect.
Cytogenetics Molecular	Translocation detected by FISH with CCND3 and IgH probes; der(14) sometimes in multiple copies; der(6) sometimes lost.
Additional anomalies	Complex karyotype in most cases.

Genes involved and Proteins

Gene Name	CCND3 (cyclin D3)
Location	6p21.1
Note	synonym CGD3
Dna / Rna	6,88kb, 5 exons, 5' - 3' telomeric orientation.
Protein	32,5kDA, 292 amino acids; regulates Rb1 phosphorylation and, hence, cell cycle G1/S transition, as a result of interaction with CDK4 and CDK6 protein kinases.

Gene Name	IGH
Location	14q32.3

Result of the

chromosomal anomaly

Hybrid gene 6p21.1 breakpoint centromeric to CCND3; 14q32.3 breakpoint in the switch region; leads to proximity between IGHS sequences and CCND3
Description on der(14).

Fusion Protein Note ^{no}

Oncogenesis Dysregulation and overexpression of CCND3.

External links

Other database [t\(6;14\)\(p21;q32\)](#) [Mitelman database \(CGAP - NCBI\)](#)

Other database [t\(6;14\)\(p21;q32\)](#) [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](#).

Bibliography

Cyclin D3 is a target gene of t(6;14)(p21.1;q32.3) of mature B-cell malignancies.

Sonoki T, Harder L, Horsman DE, Karran L, Taniguchi I, Willis TG, Gesk S, Steinemann D, Zucca E, Schlegelberger B, Sole F, Mungall AJ, Gascoyne RD, Siebert R, Dyer MJ.

Blood 2001 Nov 1; 98(9): 2837-2844.

Medline [11675358](#)

Cyclin D3 at 6p21 is dysregulated by recurrent chromosomal translocations to immunoglobulin loci in multiple myeloma.

Shaughnessy J Jr, Gabrea A, Qi Y, Brents L, Zhan F, Tian E, Sawyer J, Barlogie B, Bergsagel PL, Kuehl M.

Blood 2001 Jul 1; 98(1): 217-223.

Medline [11418483](#)

Cyclin D3 immunoreactivity in follicular lymphoma is independent of the t(6;14)(p21.1;q32.3) translocation or cyclin D3 gene amplification and is correlated with histologic grade and Ki-67 labeling index.

Pruneri G, Valentini S, Fabris S, Del Curto B, Laszlo D, Bertolini F, Martinelli G, Leocata P, Viale G, Neri A.

Int J Cancer. 2004 Oct 20;112(1):71-77.

Medline [15305377](#)

Immunoreactivity for cyclin D3 is frequently detectable in high-grade primary gastric lymphomas in the absence of the t(6;14)(p21.1;q32.3) chromosomal translocation.

Pruneri G, Fabris S, Fasani R, Del Curto B, Capella C, Pozzi B, Motta T, Andreola S, Ferreri AJ, Ponzoni M, Viale G, Neri A.

J Pathol. 2003 Aug;200(5):596-601.

Medline [12898595](#)

Characterization of oncogene dysregulation in multiple myeloma by combined FISH and DNA microarray analyses.

Fabris S, Agnelli L, Mattioli M, Baldini L, Ronchetti D, Morabito F, Verdelli D, Nobili L, Intini D, Callea V, Stelitano C, Lombardi L, Neri A.

Genes Chromosomes Cancer. 2005 Feb;42(2):117-127.

Medline [15543617](#)

Contributor(s)

Written 05-
2005 Franck Viguié

Citation

This paper should be referenced as such :

Viguié F . t(6;14)(p21;q32). Atlas Genet Cytogenet Oncol Haematol. May 2005 .

URL :

<http://www.infobiogen.fr/services/chromcancer/Anomalies/t0614p21q32ID1306.html>

© *Atlas of Genetics and Cytogenetics in Oncology and Haematology*
