

Mantle Cell Lymphoma (t(11;14)(q13;q32)): If it is indicated by pathological and immunophenotyping studies or cytogenetics studies show t(11;14) (70%), FISH for BCL1/IgH fusion gene(90%) will be followed, while PCR detects about 30-60% of the rearrangement.

Follicular Lymphoma (t(14;18)(q32;q21)): Aberration of BCL2 expression is found in 90% of FL, and t(14;18) is found cytogenetically in 75% of the FL cases. FISH for BCL2/IgH would confirm the diagnosis.

Anaplastic Large Cell Lymphoma (t(2;5)(p23;q35)): ALK immunophenotyping analysis still is the best for ALCL diagnosis. RT-PCR or DNA PCR is the method of choice for confirmation of NPM-ALK fusion transcript. FISH for ALK is also available to detect rearrangements involving ALK.

Burkitt Lymphoma (8q24): If Burkitt is diagnosed by pathological studies and/or 8q24 abnormalities are found in cytogenetics studies, FISH for c-MYC is the best to confirm rearrangement of c-MYC at this time.

NHL with Deletion of 6q: It is known as one of the most common chromosome abnormalities in NHL patients without t(14;18). It is present in about 7-14% of NHL and ALL patients. It could be sole change but most time as secondary changes. Recent studies revealed that del(6)(q25q27) in NHL and del(6)(q21q23) in ALL. FISH or PCR-based polymorphism studies have been shown to be more sensitive than standard cytogenetics to detect deletion of 6q. Some studies suggested that patients with del6q are shorter survival, but it is still a subject of debate. It might be necessary to study NHL patients with either FISH or PCR for deletion of 6q, and to distinguish two types of 6q deletions in patients del(6)(q25q27) vs del(6)(q21q23).

Frequency of 14q+ in NHL patients: t(14;18)(q32;q21) > t(8;14)(q24;q32) > t(11;14)(q13;q32)

Principal Chromosomal Abnormalities Characterized at the Molecular Level in NHL

Genes Involved	Abnormality	Incidence/histological subtype	Molecular Detection	Vysis
TAL1/TCR α/δ	t(1;14)(p32;q11)	1-3%	Southern	
TCL1/TCR α/δ	inv(14)(q11q32)	<1%	FISH	
BCL1/IgH	t(11;14)(q13;q32)	MCL	RT-PCR/FISH	available
BCL2/IgH	t(14;18)(q32;q21)	FL>DLCL	PCR/FISH	available
BCL3/IgH	t(14;19)(q32;q13)	?	?	
BCL6/IgH	t(3;14)((q27;q32)	DLCL>FL	Southern FISH	
c-MYC/IgH	t(8;14)(q24;q32)	Burkitt	FISH	available for c-MYC
NPM/ALK	t(2;5)(p23;q35)	ALCL	RT-PCR	available for ALK
PAX5/IgH	t(9;14)(p13;q32)	plasmacytoid	FISH Southern	
TCL1/ TCR α/δ	inv(14)(q11q32) t(14;14)(q11;q32)	T-PLL	FISH	

ALCL: anaplastic large-cell lymphoma aka Ki-1 lymphoma with CD30 (Ki-1) antigen

MCL: mantle cell lymphoma

DLCL: diffuse large-cell lymphoma