



Empire Genomics Probe Used to Identify Three-Way Translocation in B-cell Chronic Lymphocytic Leukemia

Background

There are several frequently reported cytogenetic abnormalities associated with B-cell chronic lymphocytic leukemia (CLL). Chromosomal translocations involving immunoglobulin heavy chain locus (IGH) have recently been revealed as being more frequent than previously reported. Chromosomal translocations are an important prognostic tool and are associated with shorter survival in patients with B-CLL. Several alternate translocations have recently been identified, but complex variant translocations in CLL have rarely been reported.

Objectives

The present study is the first report of a CLL case with a complex variant translocation involving three chromosomes - 2, 11, and 14. This 3-way translocation of the MLL gene was revealed, although further investigation is needed to determine whether it contributes to the leukemia progression or to an unfavorable clinical course in CLL.

Approach

While many chromosomal translocations have been identified in CLL, complex variant translocations have rarely been reported. To investigate these cytogenetic abnormalities in a patient with B-cell CLL, karyotype and FISH analyses from metaphase cells were performed to confirm complex translocations among chromosomes 2, 11, and 14 as well as chromosomes 14 and 19. These FISH analyses used dual color break-apart probes from Empire Genomics.

Results

LSI BCL11A and LSI BCL3 dual color break-apart probes manufactured by Empire Genomics allowed for fluorescence in situ hybridization (FISH) analyses to be performed in uncultured and cultured cells. Considered in conjunction with the FISH analyses performed using LSI IGH and LSI MLL dual color break-apart probes as well as karyotyping, researchers confirmed complex translocations among chromosomes 2, 11, and 14 as well as chromosomes 14 and 19. This three-way translocation is not yet fully understood, but the target genes may be relevant to the poor prognosis of CLL. Whether this novel translocation contributes to the disease course and prognosis warrants further investigation.

Coexistence of t(2;14;11)(p16.1;q32;q23) and t(14;19)(q32;q13.3) chromosome translocations in a patient with chronic lymphocytic leukemia: a case report

Medicine: December 2017; Volume 96; Issue 51

Lead Organization

The First Hospital of Jilin University

Diseases

- B-cell chronic lymphocytic leukemia

Biomarkers Mentioned

- IGH
- BCL3
- FGFR3
- CCND1
- BCL2
- MYC
- MLL
- MSX1
- BCL11A