FONDAZIONE PROGETTO EMATOLOGIA

Haematologica 2014 May;99(5):881-7 Epub 2014 Jan 10

PMID: 24415628 PMCID: PMC4008102 DOI: 10.3324/haematol.2013.096362

Clinical significance of LAIR1 (CD305) as assessed by flow cytometry in a prospective series of patients with chronic lymphocytic leukemia

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Abstract

Most patients affected by chronic lymphocytic leukemia are diagnosed by flow cytometry. Several immunophenotypic markers have been identified as significant and independent prognostic variables, especially from retrospective cohorts. However, while attractive because their detection is inexpensive and feasible in most laboratories, only few have been validated by independent series. The expression of leukocyte-associated immunoglobulin-like receptor-1 (also known as LAIR1, LAIR-1 or CD305), an inhibitor of B-cell receptor-mediated signaling, has been reported to be lacking in high-risk chronic lymphocytic leukemia. However, its correlation with biological variables and its prognostic significance remain unknown. We investigated 311 consecutive patients, prospectively enrolled since 2007. Methods for studying patients were standardized and included clinical assessment, immunophenotype, fluorescence in situ hybridization, and status of immunoglobulin heavy chain variable region genes. Overall, 22.1% of patients had Binet stage B or C disease, 38.5% had unmutated immunoglobulin genes, 15.1% had high-risk cytogenetic abnormalities, 23.4% were CD38(+), 37.8% CD49d(+), and 59.8% LAIR1(+). Expression of LAIR1 was inversely related to that of CD38 (P=0.0005), but was not associated with CD49d expression (P=0.96). A significantly lower expression of LAIR1 was observed in patients with Binet stage B or C disease (P=0.023), and in the presence of high-risk cytogenetic abnormalities (P=0.048) or unmutated immunoglobulin heavy chain variable region genes (P<0.0001). At univariate analysis LAIR1(+) was significantly associated with longer time to first treatment (P=0.0002). This favorable effect of LAIR1(+) was confirmed by multivariate analysis (hazard ratio=2.1, P=0.03 for LAIR1). Our results indicate that LAIR1 expression is a reliable and inexpensive marker capable of independently predicting time to first treatment in newly diagnosed unselected patients with chronic lymphocytic leukemia.