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MLL gene rearrangement, cytogenetic 11q23 abnormalities, and expression of the NG2 molecule in infant acute myeloid leukemia

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Abstract

To study prognostic factors in infant acute myeloid leukemia (AML), we analyzed 44 children treated on Childrens Cancer Group protocols for MLL gene rearrangement by Southern blot, cytogenetic 11q23 abnormalities, and reactivity with monoclonal antibody 7.1. This antibody detects the human homologue of the rat NG2 chondroitin sulfate proteoglycan molecule, which has previously been reported to be expressed on human melanoma. NG2 has been found to be expressed on human leukemic blasts but not on other hematopoietic cells. In childhood AML, NG2 cell surface expression correlated with poor outcome and with some but not all 11q23 rearrangements. In childhood acute lymphoblastic leukemia, NG2 expression correlated with poor outcome and with balanced 11q23 translocations. In this study, 29 of 44 (66%) of infants with AML showed MLL rearrangement and, as expected, this group had a high incidence of French-American-British M4/M5 morphology (22/29). Of the cases tested, 35.1% (13/37) were NG2 positive. All (13/13) NG2-positive cases were rearranged at MLL, whereas only 46% (11/24) of NG2-negative cases had MLL rearrangement. NG2 expression did not correlate with poor outcome (P = .31); there was a trend towards a worse outcome with MLL rearrangement (P = .13). Thus monoclonal antibody 7.1 does not detect all cases of MLL rearrangement in infant AML.

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