CHILDHOOD ACUTE LYMPHOBLASTIC LEUKEMIA WITH THE t(4;11)(q21;q23): AN UPDATE

To the Editor:

The t(4;11)(q21;q23), found in 2% of childhood acute lymphoblastic leukemias (ALL), is associated with female sex, age of less than 1 year (60%), hyperleukocytosis, CD10− B-precursor cell immunophenotype, and myeloid-associated antigen (CD15) expression.1 In an earlier report, we suggested an age-related difference in treatment outcome among cases with the t(4;11), ie, children aged 1 to 9 years have a better outcome than infants or adolescents.1 A subsequent review of the literature confirmed the suggestion and

Fig 1. Kaplan-Meier estimates of event-free survival (EFS) among cases with the t(4;11) according to age. Percentages are for 3-year EFS; 5-year EFS for children aged 1 to 9 is 83% ± 19% and for infants is 17% ± 9%. Patients remaining in remission include patients no. 1, 13, 15, 24, 25, and 29 through 33 from the original report.1
showed that adults greater than 18 years of age had the shortest event-free survival. However, the follow-up period was short in our previous study, and the findings of the review should be interpreted with caution because of potential selection bias and heterogeneous treatment.

Because such findings have important implications for treatment selection, we updated the outcome of our original cohort of 40 patients. With 3.5 additional years of follow-up for patients remaining in remission, children aged 1 to 9 years continue to have a better outcome than infants or adolescents (Fig 1).

Recent studies have shown that the t(4;11) affects the MLL gene (also known as ALL1, Htx, or HRX) on chromosome 11 and the AF4 gene (also named FEL) on chromosome 4, resulting in generation of chimeric genes on both the der(4) and der(11) chromosomes.ają

Apparently, the chimeric gene product critical to leukemogenesis is derived from the der(11) chromosome. In this regard, the extremely poor treatment outcome ascribed to infant ALL appears limited to those cases with the MLL-AF4 fusion gene or other 11q23 abnormalities involving the MLL gene. Although molecular abnormalities are well characterized in infant cases, studies of other childhood cases are limited. However, in the few cases of ALL with the t(4;11) in children ages 1 to 9 years at diagnosis that have been studied, molecular defects were similar to those of infant cases.

It appears that age has an important prognostic impact even among t(4;11) cases. The dismal prognosis of adults, adolescents, and infants with this chromosomal abnormality, even with contemporary intensive treatment, justifies the use of bone marrow transplantation or other innovative treatment approaches. Additional studies are needed to confirm the relatively favorable prognosis of children ages 1 to 9 years with t(4;11) ALL and to identify any features that might explain this finding.

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Ching-Hon Pui
Andrew J. Carroll
Susana C. Raimondi
Jonathan J. Shuster
William M. Crist
D. Jeanette Pullen
St Jude Children’s Research Hospital
Memphis, TN

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CH Pui, LAJ Carroll, SC Raimondi, JJ Shuster, WM Crist and DJ Pullen