Editorial

Infant Leukemia: Finding the Needle in the Haystack

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Historically, the study of rare malignancies, including retinoblastoma, angiosarcoma, and vaginal clear cell carcinoma, has led to major findings in our understanding of cancer etiology. Leukemias that occur in children less than 1 year of age likely represent another rare group that could potentially lead to further understanding of carcinogenesis. The vast majority of infants present with a genetic abnormality in their leukemia cells that affects the *MLL* gene on chromosome band 11q23, and a substantial body of evidence supports the contention that these *MLL* abnormalities (mostly rearrangements) occur *in utero* (1). Thus, the window of exposure is very brief. We and others have shown that specific environmental exposures (2, 3) and genotypes (4-7) may be unique to these *MLL* abnormalities in infant leukemias. Here, Pombo-de-Oliveira et al. (8) demonstrate an association between infant leukemia and maternal hormone use before and during pregnancy, which appeared to vary by timing of exposure and *MLL* status. The authors further show an association of *MLL*-positive infant leukemia with quinolones, which, although imprecise, is interesting given these drugs that interact with DNA topoisomerase II (9). These results support differing etiologies for molecularly defined subtypes of infant leukemia. Rarity is the major obstacle to elucidating translocation-specific risk factors but may be overcome by cooperative group participation (10) and international collaboration. Epidemiologic investigations may also be informed by mechanistic studies, which have sought to correlate prenatal exposures with the frequency of MLL transcripts or chromosome breakage at the 11q23 locus in cord blood (11, 12). Thus, we expect big developments from this small cancer.

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