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CONCLUSION: These data show an association between hormone concentrations and birth weight, however, the hormones involved and their patterns of association differ between the fetal and maternal results. In addition, these data are not consistent with the hypothesis that higher estrogen concentrations in high birth weight babies mediate the positive association with breast cancer risk observed in epidemiologic studies.

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#21-S
THE ROLE OF MDR-1 GENE POLYMORPHISMS IN THE GENETIC SUSCEPTIBILITY TO CHILDHOOD LEUKEMIA
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PURPOSE: Childhood leukemia is likely a multifaceted disease resulting from a combination of environmental and genetic factors. P-glycoprotein (PGP), encoded by the MDR-1 gene, is a transmembrane protein that serves as an efflux pump for a wide variety of lipophilic compounds and has a physiologic role of protecting cells against the DNA damaging potential of certain xenobiotics. The polymorphism, C3435T, of this gene has been correlated with altered PGP function in the cells of the intestine, placenta, and hematologic compartments. Therefore, we questioned the putative role of MDR-1 polymorphisms as a susceptibility factor of childhood leukemia.

METHODS: Buccal cell DNA of 151 pediatric leukemia cases and 193 control children ascertained through the Northern California Childhood Leukemia Study were genotyped for two common MDR-1 gene polymorphisms, C1236T and C3435T. Genotype data was obtained using multiplex polymerase chain reaction and single nucleotide polymorphism analysis that utilizes the single base extension procedure.

RESULTS: Overall allele frequencies of C1236T (45%) and C3435T (49%) were comparable to allele frequencies reported in other studies. Children with the C3435T variant allele were not at a significantly increased risk of developing leukemia. The association between C1236T and leukemia was not statistically significant but was suggestive of a dose response effect. A stratified analysis showed no evidence that C1236T and C3435T affect risk of childhood leukemia differently between Hispanic and non-Hispanic White populations. Limiting the population to acute lymphocytic leukemia yielded similar results.

CONCLUSION: Results of this study provide little evidence that MDR-1 gene polymorphisms alone significantly affect risk of childhood leukemia. Further evaluation, in the context of gene and gene-environment interactions, is required before definitive conclusions are made regarding the role of the MDR-1 gene in the susceptibility to childhood leukemia.

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