POLYMORPHISM IN METHYLENETETRAHYDROFOLATE REDUCTASE (*MTHFR*) AND METHIONINE SYNTHASE (*MS*) AND THE RISK OF CHILDREN ACUTE LEUKEMIA

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Acute leukemia (AL) is the most common hematology neoplasia in childhood. Folate is an important vitamin for cell division and for maintaining homeostasis. Methylenetetrahydrofolate reductase (MTHFR) plays a central role in folate metabolism that affects DNA methylation and synthesis. Common polymorphisms in *MTHFR* gene (C677T) decreased enzimatic activity. Another enzyme involved in that mechanism is methionine synthase (MS), who acts in methylation of homocysteine to methionine. *MS* gene presents polymorphism (A2756G) associated to decreased catalytic enzyme activity. The aim of this study is to investigate the association of *MTHFR* C677T and *MS* A2756G polymorphisms in 53 children with AL and 58 controls without cancer report. Genotyping was defined for PCR-RFLP. The genotyping distribution was in accord Hardy-Weinberg equilibrium ($\chi^2_{MTHFR=}$ 0.09; p= 0.95 and $\chi^2_{MS=}$ 1.14; p= 0.56). The results not suggest an association for genotypes *MTHFR* 677CT [$OR_{CC/TT}$ = 1.10; IC (0.25- 4.81); p = 0.80 and $OR_{CC/CT+TT}$ = 0.93; IC (0.43-1.99); p = 0.98] and *MS* A2756G [$OR_{AA/AG+GG}$ = 1.14; CI (0.52-2.51); p = 0.88] with cancer risk. These results suggest that $MTHFR_{C677T}$ and MS_{A2756G} polymorphisms are not genetic risk factors for AL.

Key words: Leukemia, Folate, *MTHFR*, *MS*, Polymorphism