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Introduction: Amino Acid Composition of Blood of Fetuses and Newborns with Intrauterine Growth Retardation. The processes of growth of the fetus are provided by a constant supply of amino acids from mother, which provides the production of proteins and muscle tissue of the fetus. The purpose of this research was to study the amino acid level in blood of fetuses and newborns with intrauterine growth restriction.

Methods: The umbilical blood of 36 fetuses and newborns (basic group) with intrauterine growth restriction (IUGR) and 32 fetuses and newborns with normal development (control group) have been examined. Amino acid levels were determined by enzyme immunoassay.

Results: Amino acid content in blood of fetuses of both groups was within acceptable limits, excluding glutamine, glutamic acid and lysine. Glutamine level in umbilical cord blood of the fetuses of main group (36,33?2,44 nM/L) was less than the lower limit of normal (300-700 nM/L) and remained at the lower rates after birth (70,0?9,9 nM/L). Apparently, of glutamine level for the fetuses with IUGR decreases due to both alteration in delivery from the mother's blood and alteration in its synthesis in placenta. It is possible to assume its excessive consumption on synthesis of other amino acid for which it appears to be the predecessor. Concentration of the glutamic acid in the fetuses and newborns of both groups was higher than the standard indicator, amounting, respectively, to 420,66?63,81 and 376,0?48,91nM/L for the main group of interest and 372,33?44,31 and 490,66?50,66 ? for the control group, at a rate of from 20 to 100 nM/L.

Conclusion: Level of glutamic acid increases excessively due to inadequate metabolic processes in the fetuses with IUGR. ?Vicious? circle is developing, bringing alterations in the tectonic processes and formation of energetic insufficiency.