

Changes of calcium and iron contents in the blood serum of pregnant

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ABSTRACT

In Georgia, on the grave social-economic background, rate of iron deficiency anemia is markedly increased in children and adults. Proceeding from the aforesaid, complex study of calcium and iron contents in the blood serum of pregnant has been considered as a topical. Owing to our investigations, indices of iron and calcium deficiency in pregnant, according to gestation period, has been stated. Have been shown that during gestation period from 8 to 15 weeks, iron deficiency was detected in 8% of pregnant, during gestation period from 15 to 27 weeks – in 25% and during gestation period from 27 to 36 weeks – in 45%. According to the results, obtained after investigations, inclusion of iron preparations in the scheme of pregnant treatment, along with investigation of iron in blood serum, has been recommended. Calcium deficiency has been stated in 61% of pregnant with gestation period from 8 to 15 weeks, 74% - in pregnant with gestation period from 15 to 27 weeks and 91% - in pregnant with gestation period from 29 to 36 weeks. Thus, detection of calcium and iron contents in blood serum of all pregnant is strongly recommended. Obtained results must be considered during treatment.

KEYWORDS: *pregnancy, calcium, iron, anemia*

In Georgia, during latest decade, social-economic state significantly has changed, and incidents of iron deficiency anemia in infants and adults markedly have increased. If frequency of iron deficiency anemia in 1994 year was 15,9%, at 2001 year – it consisted 25%.

Among individuals, suffering from iron deficiency, pregnant are distinguished. Hyposiderosis have frequently been detected in pregnant, especially at twins delivery, in frequent labors and prolonged lactations.

In case of premature delivery, iron deficiency has not been restored that is the major reason for progression of hyposiderosis and early abortion in the next pregnancy.

For normal pregnancy and fetal development, along with iron, normal calcium content as well, is of great value. During pregnancy, maternal organism tries to accumulate calcium, thereby providing perfect lactation. Calcium demand is especially high during lactation period. Fetus always gets calcium from maternal organism (from bones).

Has been stated that high level of calcium during gestation period protects pregnant from serious complications in the process of labor. Experiments have shown that pregnant receiving 1500-2000 g calcium a day, had a low risk of preeclampsia.

Proceeding from the aforesaid we were aimed to study calcium and iron contents in the blood serum of pregnant.

MATERIAL AND METHODS

A total of 37 practically healthy women and 32 pregnant with the age range from 18 to 36 have been investigated. Practically healthy women consisted the control group.

Calcium and iron contents in dynamics have been detected in both experimental groups.

Iron content in blood serum has been defined by the Henry's method with the use of reagents' complex (firm "Lachema"). Calcium content has been defined using the reagents' complex (firm "Lachema").

RESULTS

Analysis of results of investigations revealed decrease tendency of iron in blood serum correlating with gestation period. The iron concentration was in norm in 79% of

pregnant and decreased in 8% of pregnant with gestation period from 8 to 15 weeks. In pregnant with gestation period from 15 to 27 weeks the iron concentration was in norm in 60% of cases and decreased – in 25%. In pregnant with gestation period from 29 to 36 weeks the iron content in serum was in norm in 44% of cases and decreased – in 45%. Decrease tendency of iron in blood serum, correlating with gestation period, could be explained by increased consumption of iron. Along with increasing gestation period, fetus demands more iron to meet the body's needs.

According to literature data required for fetus concentration of iron is delivered from maternal organism that is reflected on maternal stores of iron. Iron level in blood serum of pregnant decreases especially at late months of gestation, when fetus forms its own iron storage. If maternal organism is unable to meet the fetal demand, iron deficiency anemia develops.

Investigation of calcium level in blood serum has shown that it was decreased in all cases. Calcium level in blood serum was in norm in 39% and decreased in 61% of pregnant with gestation period from 8 to 15 weeks. In pregnant with gestation period from 15 to 27 weeks the calcium level was in norm only in 26% of cases and decreased – in 74%. In pregnant with gestation period from 29 to 36 weeks the calcium level was in norm in 9% of cases and deficit level was increased by 91%.

Calcium's intense consumption fetus begins at the early period of gestation and increases more, when fetal nervous system, skeleton, and internal organs start formation. At the fifth month of fetal development, in jaw appear the germs of teeth. At the same time, it must be mentioned that only 15-35% of calcium is used by the fetus. That's why calcium level decreases in pregnant at 8 to 15 weeks of gestation and this decrease progresses in correlation with gestation period. Increased consumption of calcium by fetus explains high incident of caries in pregnant at the late period of gestation.

Investigations have revealed the correlation between decreased calcium and iron levels in blood serum. Investigations of iron and calcium contents in blood serum of pregnant have revealed calcium deficiency at all stages of gestation period and correlation between decreased calcium and iron levels.

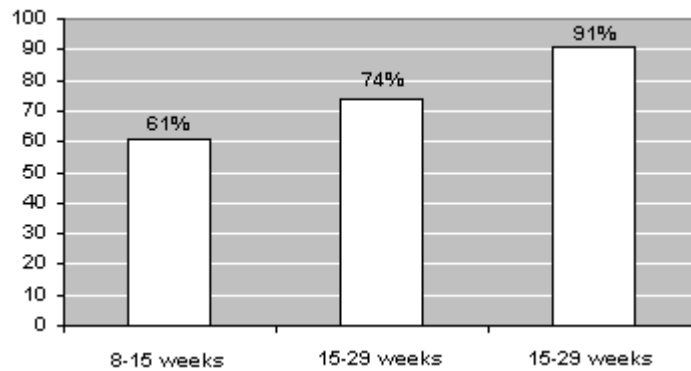


Fig.1 Iron deficiency anemia during gestation period.

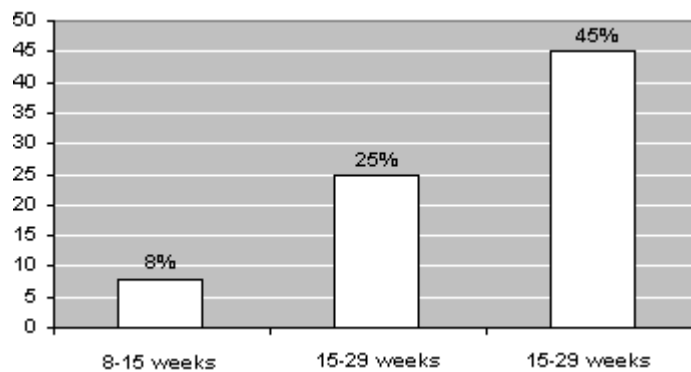


Fig.2 Calcium deficit during gestation period.

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Изменения содержания кальция и железа в крови у беременных женщин

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РЕЗЮМЕ

Тяжелый социально-экономический фон обуславливает рост железодефицитной анемии в Грузии как у детей и подростков, так и среди беременных женщин. Целью исследования являлось комплексное изучение содержания кальция и железа в крови у беременных. Изучались показатели дефицита кальция и железа с учетом сроков беременности. Дефицит железа выявлен у 8% беременных со сроком беременности 8-15 недель, 25% - 15-27 недель и 45% - 27-36 недель. Дефицит кальция - у 61% беременных со сроком беременности 8-15 недель, 74% - 15-27 недель и 91% - 27-36 недель. Полученные результаты свидетельствуют об необходимости проведения анализов крови на содержание кальция и железа с 8-ми недели беременности и при необходимости назначения медикаментозного лечения для корректировки содержания в крови этих элементов.

Ключевые слова: беременность, кальций, железо, анемия