

ASSESSMENT OF LEAD AND CADMIUM CONTENT IN THE BLOOD OF PREGNANT AND NON-PREGNANT WOMEN

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Key words: pregnancy, blood, lead, cadmium.

The reproductive health care is a priority problem due to the unhealthy environment. In this regard, a particular attention should be paid to the research of the heavy metal content in women organisms, which can be helpful in preserving the health of women and newborns. So, the aim of this study was to evaluate the level of lead and cadmium, as global environmental pollutants, in the blood of non-pregnant women and women in different trimesters of pregnancy.

The toxic elements content in the blood of 31 non-pregnant women, 80 women with physiological course of gestation and 70 women with complicated pregnancy has been investigated. Inversion voltammetry has been used to determine the metal concentration.

The average level of lead in women with uncomplicated pregnancy was 0.124 ± 0.017 mg/l, 0.086 ± 0.013 mg/l and 0.058 ± 0.005 mg/l according to trimesters of gestation. It has been revealed a slight increase on 10.7 % in the first trimester of pregnancy ($p > 0.05$), a decrease of 23.2 % in the second ($p > 0.05$), and on 48.2 % – in the third trimester ($p > 0.01$) in comparison with non-pregnant women, where its level was 0.112 ± 0.012 mg/l.

The cadmium level during uncomplicated pregnancy was equal to 0.0054 ± 0.0008 mg/l, 0.0040 ± 0.0007 mg/l and 0.0038 ± 0.0004 mg/l for gestation trimesters and was characterized by a significant decrease concentrations respectively 34.9 % ($p < 0.05$), 51.8 % and 54.2 % ($p < 0.01$) compared with non-pregnant women, where its level was 0.0083 ± 0.0009 mg/l.

The lead content in the first trimester of complicated pregnancy was 0.295 ± 0.027 mg/l that exceeds 2.6 times the concentration in non-pregnant women. In the second trimester there was an increase on 22.0 %, i.e. the highest within the whole period of observation (0.360 ± 0.036 mg/l). In the third trimester of gestation its level although decreased on 36.9% compared with second trimester, but still twice exceeded the index in non-pregnant women.

The highest level of cadmium (0.0152 ± 0.0025 mg/l) was detected in the first trimester of complicated pregnancy. However, in the second trimester its content was reduced to 0.0118 ± 0.0018 mg/l and reach the level of non-pregnant women. During the third trimester the average level of cadmium was 0.0145 ± 0.0018 mg/l that has exceeded 1.7 times the concentration in non-pregnant women. Generally, in women with complicated pregnancy the significantly ($p < 0,05$) higher cadmium levels were revealed, i.e. in the first trimester – up to 83.1 %, in the second – 42.2 % and 74.7 % in the third trimester of gestation.

The assessment of toxic elements content showed their lower levels in the blood of women with uncomplicated pregnancy, while in the complicated gestation – their concentrations were higher. The above research proved to be useful in further lead and cadmium investigations in the blood of women, especially in early gestation to predict possible complications and timely adjustment measures.