

## **EVALUATION OF THE DYNAMICS OF THYROID HORMONES LEVELS DURING NORMAL PREGNANCY BY ELISA**

**Background:** Pregnancy is associated with changes in thyroid function, which are result of a normal physiologic state.

**Methods.** Levels of thyroid stimulating hormone (TSH), free thyroxine (FT4), free triiodothyronine (FT3), total thyroxine (TT4), total triiodothyronine (TT3) during normal pregnancy were evaluated using ELISA kits (RPC Diagnostic Systems, Russia).

**Results:** Two groups of samples were investigated. The first group consisted of 360 serum samples from white women with normal pregnancy (Central Russia and Volgo-Viatsky Region, from 4 to 39 gestational weeks). The second group included 103 serum samples from white non-pregnant women (the same region). The Mann-Whitney U test (in case of non-normal distribution) and t-statistic (in case of normal distribution) were used to compare differences between two independent groups. TSH level was lower in pregnancy state (1 trimester - median 1.26,  $P < 0.001$ ; 2 trimester - median 1.39,  $P = 0.003$ ; 3 trimester - median 1.61,  $P > 0.05$ ) than in normal state (median 1.83  $\mu\text{IU/mL}$ ). FT4 level was lower in pregnancy state (1 trimester - median 13.7,  $P > 0.05$ ; 2 trimester - median 13.0,  $P < 0.001$ ; 3 trimester - median 10.7,  $P < 0.001$ ) than in normal state (median 14.1  $\text{pmol/L}$ ). FT3 level was the same in pregnancy state (1 trimester - median 2.97,  $P > 0.05$ ; 2 trimester - median 2.99,  $p > 0.05$ ; 3 trimester - median 2.72,  $P > 0.05$ ) as in normal state (median 2.91  $\text{pg/mL}$ ). TT4 level was greater in pregnancy state (1 trimester - median 123,  $P < 0.0001$ ; 2 trimester - median 133,  $p < 0.0001$ ; 3 trimester - median 127,  $P < 0.0001$ ) than in normal state (median 96  $\text{nmol/L}$ ). TT3 level was greater in pregnancy state (1 trimester - median 1.40,  $P < 0.0001$ ; 2 trimester - median 1.61,  $P < 0.0001$ ; 3 trimester - median 1.73,  $P < 0.0001$ ) than in normal state (median 1.19  $\text{ng/mL}$ ).

**Conclusions.** We observed a statistically significant suppression serum TSH in the 1 trimester of pregnancy when the human chorionic gonadotropin levels reach their peak. Concentrations of FT4 decrease during pregnancy in contrast to FT3 due to the high affinity of thyroxine-binding globulin for T4. Total T4 and T3 levels increase from 1 to 2 trimesters and they reach a plateau from 2 trimester to term. We defined normal trimester specific limits for these hormones in Central Russia population.