

TRIMESTER-SPECIFIC REFERENCE LIMITS FOR THYROID HORMONES IN RUSSIAN POPULATION WITH THE MONOCLONAL ELISA

Background: Maternal thyroid dysfunction may be associated with increased risks of adverse pregnancy and perinatal outcomes. Therefore, a local reference range for thyroid hormones in pregnant women is required.

Methods: Samples were tested for thyroid stimulating hormone (TSH), free thyroxine (FT4), total thyroxine (TT4), free triiodothyronine (FT3), total triiodothyronine (TT3), antibodies to thyroid peroxidase (TPO-Ab), human chorionic gonadotropin (HCG). All testing was performed using ELISA kits (RPC Diagnostic Systems, Russia).

Results: 360 serum samples from white women (Central Russia and Volgo-Viatsky Region, mean age 29) with normal pregnancy were examined. Reference limits (2.5th and 97.5th percentile) were calculated using TPO-Ab negative specimens with normal levels of HCG. Trimester specific median, and 2.5th – 97.5th percentile ranges for each analyte are reported below: TSH 1st trimester - median 1.26 $\mu\text{IU/mL}$, normal interval from 0.10 to 2.84 $\mu\text{IU/mL}$, 2nd trimester - median 1.39 $\mu\text{IU/mL}$, normal interval from 0.22 to 3.25 $\mu\text{IU/mL}$, 3rd trimester - median 1.61 $\mu\text{IU/mL}$, normal interval from 0.47 to 3.32 $\mu\text{IU/mL}$; FT4 1st trimester - median 13.7 pmol/L, normal interval from 10.9 to 22.9 pmol/L, 2nd trimester - median 13.0 pmol/L, normal interval from 9.9 to 16.9 pmol/L, 3rd trimester - median 10.7 pmol/L, normal interval from 8.3 to 14.9 pmol/L; TT4 1st trimester - median 123 nmol/L, normal interval from 84 to 172 nmol/L, 2nd trimester - median 133 nmol/L, normal interval from 107 to 165 nmol/L, 3rd trimester – median 127 nmol/L, normal interval from 97 to 158 nmol/L; FT3 1st trimester - median 2.97 pg/mL, normal interval from 1.96 to 5.0 pg/mL, 2nd trimester - median 2.99 pg/mL, normal interval from 2.25 to 4.54 pg/mL, 3rd trimester - median 2.72 pg/mL, normal interval from 2.11 to 3.97 pg/mL; TT3 1st trimester - median 1.4 ng/mL, normal interval from 0.86 to 2.15 ng/mL, 2nd trimester – median 1.61 ng/mL, normal interval from 1.12 to 2.33 ng/mL, 3rd trimester - median 1.73 ng/mL, normal interval from 0.94 to 2.42 ng/mL.

Conclusions: We determined trimester-specific normal limits for serum thyroid hormones in Central Russia population with the ELISA (RPC Diagnostic Systems, Russia). These intervals may reduce the risk of mis-interpretation of thyroid function during pregnancy.

Euromedlab Milano 2013; 20th IFCC-IFLM European Congress of Clinical Chemistry and Laboratory Medicine, 45th Congress of Italian Society of Clinical Biochemistry and Clinical Molecular Biology (SIBioC) -19-23 May-Milano, Italy – T. 218.