1.1 Streszczenie w języku angielskim

The primary aim of ultrasound examinations in perinatology is to assess the growth and development of the foetus during pregnancy. By this we understand the detection of abnormalities, intrauterine disorders and the assessment of foetal maturity. Properly conducted prenatal diagnosis allows to minimize unfavourable obstetric results. Growth disorders and a large proportion of foetal developmental abnormalities are most frequently diagnosed in the second half of pregnancy. Early diagnosis creates greater possibilities for treatment and prevention of complications. The size of the foetus in the first trimester of pregnancy, assessed by measuring crown-rump length (CRL) in ultrasound examinations, reflects most accurately the age of the foetus and determines the date of delivery. The growth is fastest and steady in the first trimester of pregnancy, after the organogenesis is complete. However, the differences in growth may be indicative of abnormal foetal development. The analysis of this relationship may be important in the improvement of perinatal care.

The aim of the study was to assess whether reduced values of CRL in the first trimester of pregnancy could have a prognostic value. The research was carried out in a group of 100 pregnant women, whose foetuses were monitored by ultrasound throughout the pregnancy and assessed postpartum. The study was conducted from March 2019 to January 2022 in two centres: the ultrasound laboratory at the Private Obstetrics and Gynaecology Practice run by Dr Święc and the Department of Perinatology and Obstetrics with Birth School at the Medical University of Bialystok Clinical Hospital in Bialystok. The research was approved by the Bioethics Committee of the Medical University of Bialystok.

The group of participants was selected from among the women applying for routine prenatal ultrasound examinations in the first trimester of pregnancy. The inclusion criteria for the women in the study were the following: regular menstruation every 28 days, the date of last menstruation, natural conception, a single pregnancy between 11-13 + 6 weeks of its duration, healthy women (without comorbidities) of different ages and gravidity. Then, the study group (n-100) was compared with the reference group (n-100).

Appropriate statistical methods were used to verify the hypotheses. The normality distribution was verified using the Shapiro-Wilk test. The relationship between two categorical variables was tested with the Chi-Square Test. The results of the analysis were considered statistically significant at $p < 0.05$.

The conducted research provides the basis for the following conclusions:

1. The measurement of CRL in the first prenatal test has prognostic value and it can predict low birth weight.

2. In the first trimester of pregnancy, the weaker growth dynamics of the foetus can be diagnosed.

3. Finding lower CRL values is associated with more frequent occurrence of SGA (which increases with the course of pregnancy).

4. Lower CRL values than expected in the prenatal test are associated with more frequent occurrence of abnormalities - foetuses smaller than 7 days have an increased predisposition to the occurrence of abnormalities in the 1st, 2nd and 3rd trimesters of pregnancy and an abnormal PAPP-A and β-hCG tests result, of which the heart abnormality is are the largest group.

5. If a smaller foetus than expected in the first prenatal examination is found, the frequency of abnormalities increases with the development of pregnancy.

6. Growth restriction during the first trimester of pregnancy is associated with a higher risk of adverse delivery outcomes and baby health problems.