

## MULTIFACTORIALITY OF PRETERM BIRTH CAUSES

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**Relevance:** The high prevalence of premature birth is a serious clinical problem that entails significant socio-economic and medical consequences, posing the task of finding new predictors for obstetricians and gynecologists.

**Objective of the study:** To determine significant markers of premature labor and assess the possibility of their use in creating a mathematical model for predicting premature birth.

**Materials and methods:** The prospective comparative study included 85 pregnant women, who made up two groups: group 1 (n = 42), who gave birth prematurely and group 2 (n = 43), who gave birth on time. In both groups, a study of the somatic and reproductive history was conducted, age and body mass index were assessed. All patients underwent hemoglobin levels, red blood cell counts, white blood cells, neutrophils, as well as ferritin, IL-6, prolactin, and relaxin concentrations.

**Results:** In age-matched groups (p=0.476), BMI in groups 1 and 2 was 25.08±2.96 and 23.0±1.88, respectively (p=0.001); the age of menarche in groups 1 and 2 was 11.45±0.99 and 12.28±1.20, respectively (p=0.003); the duration of menstruation in group 1 4.00±0.77 was significantly less than in group 2 4.81±1.37 (p=0.008). Gastrointestinal diseases were registered in 61.9% and 30.23% of women in groups 1 and 2, respectively (p=0.003). Various endocrinopathies were registered in 38.1% and 16.28% of women in groups 1 and 2, respectively (p=0.024). The frequency of urinary tract infections in groups 1 and 2 was 54.76% and 25.58%, respectively (p=0.006). The hemoglobin level in women in labor with premature birth was 114.12±12.22 g/l and was significantly lower than in those who gave birth at term 121.95±10.36 g/l (p=0.002); the number of erythrocytes was 3.73±0.38 and 3.94±0.41, respectively (p=0.018). The ferritin level in groups 1 and 2 was 21.81±9.69 µg/l and 78.84±17.86 µg/l, respectively (p=0.001). In groups 1 and 2, the IL-6 indicators were 124.78±10.88 pg/ml and 80.96±5.07 pg/ml (p=0.001), leukocytes 14.4±4.66 10<sup>9</sup>/l and 11.97±2.38 10<sup>9</sup>/l (p=0.021) and neutrophils 81.46±7.85% and 72.24±7.16% (p=0.002). Moderate Spearman rank correlations (R) were found between prolactin and relaxin in the preterm group (R=0.515) and in the term group (R=0.454). The identified risk factors were used to construct a prognostic model using the support vector machine and automatic neural networks.

**Conclusion:** Age of menarche, duration of menstruation, gastrointestinal diseases, urogenital tract infections and endocrine pathology, as well as levels of neutrophils, leukocytes, IL-6, ferritin, prolactin and relaxin correlate with the risk of preterm birth.

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