

Low levels of circulating T-regulatory lymphocytes and short cervix are associated with preterm labor

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Objective

Ultrasound measurement of the uterine cervix represents well-established method in the prediction of preterm labor, with rather unsatisfactory sensitivity and positive predictive value. T-regulatory lymphocytes (CD4+CD25+CD127-Tregs) may play an important role in the pathophysiology of preterm labor. The aim of this study was to assess the relationship between maternal circulating Tregs, sonographically measured uterine cervix and the risk of preterm labor.

Methods

A total of 60 females with regular contractions and/or short cervix were included in a prospective longitudinal cohort study. All patients at recruitment were between 24 to 32 weeks of gestation. A peripheral blood sample was drawn from the cubital vein to the tube with the sodium heparin directly after the ultrasound vaginal cervicometry and was analyzed within 4 hours. Following clinical outcomes were recorded in all subjects: delivery within 48 hours after the examination; delivery before the 34 weeks' gestation; and delivery before 37 weeks' gestation.

Results

Using pooled Treg and cervical length data from all examined cohorts, unadjusted odds ratios for preterm delivery were count. The risk of preterm labour within 48 hours of testing was demonstrated to be almost thirty five times higher (OR = 35. 21, CI 13. 3;214, $p < 0. 001$) in the group with simultaneously low Treg values ($0. 031 \times 10^9/L$) and a shortened uterine cervix (17, 5 mm), compared to the situation where both of these values were normal. We found similar results when combining the predictive value of Treg levels with cervical measurement in predicting preterm delivery before 34 as well as 37 weeks.

Conclusion

The odds ratios that preterm delivery will occur given a short cervix and low Treg count is significantly higher than odds ratios in other combinations and/or separate test measurements. Our results may offer potential clinical application of a combined assessment of Treg count and cervical measurement in patients who present with risk factors for preterm labor. However, further studies are required to elucidate the functional significance of these findings.