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**Early Pregnancy Prediction of Preeclampsia in Nulliparous Women, Combining Clinical Risk and Biomarkers: The Screening for Pregnancy Endpoints (SCOPE) International Cohort Study.**

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**Abstract**

More than half of all cases of preeclampsia occur in healthy first-time pregnant women. Our aim was to develop a method to predict those at risk by combining clinical factors and measurements of biomarkers in women recruited to the Screening for Pregnancy Endpoints (SCOPE) study of low-risk nulliparous women. Forty-seven biomarkers identified on the basis of (1) association with preeclampsia, (2) a biological role in placentation, or (3) a role in cellular mechanisms involved in the pathogenesis of preeclampsia were measured in plasma sampled at 14 to 16 weeks' gestation from 5623 women. The cohort was randomly divided into training (n=3747) and validation (n=1876) cohorts. Preeclampsia developed in 278 (4.9%) women, of whom 28 (0.5%) developed early-onset preeclampsia. The final model for the prediction of preeclampsia included placental growth factor, mean arterial pressure, and body mass index at 14 to 16 weeks' gestation, the consumption of ≥3 pieces of fruit per day, and mean uterine artery resistance index. The area under the receiver operator curve (95% confidence interval) for this model in training and validation cohorts was 0.73 (0.70-0.77) and 0.68 (0.63-0.74), respectively. A predictive model of early-onset preeclampsia included angiogenin/placental growth factor as a ratio, mean arterial pressure, any pregnancy loss <10 weeks, and mean uterine artery resistance index (area under the receiver operator curve [95% confidence interval] in training and validation cohorts, 0.89 [0.78-1.0] and 0.78 [0.58-0.99], respectively). Neither model included pregnancy-associated plasma protein A, previously reported to predict preeclampsia in populations of mixed parity and risk. In nulliparous women, combining multiple biomarkers and clinical data provided modest prediction of preeclampsia.

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**KEYWORDS:**

biological markers; diagnosis; preeclampsia; pregnancy