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Study of 1,800 first-time moms shows protein screening ineffective for hypertension prediction

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Results from a large stud show that protein analyses taken during the first trimester of pregnancy did not improve predictions for identifying people at risk for experiencing conditions related to having high blood

pressure during pregnancy.

Since there is an urgent need to better predict people at risk for developing conditions related to having high blood pressure during pregnancy, also called hypertensive disorders of pregnancy, researchers have been studying if proteins taken from blood or urine samples could provide this insight. This study, published in *JAMA Cardiology*, provides the largest data to date based on using protein analyses from blood samples during early pregnancy.

For this study, researchers analyzed 6,481 proteins from 1,850 study participants who had a first pregnancy between 2010 and 2013. Participants provided a blood sample during the study enrollment and had study check-ins during their second and third trimesters, after delivery, and two to seven years after their pregnancy.

The protein analysis was used in different modeling equations to assess if proteins or their combinations with clinical data, such as maternal age and cardiovascular disease risks, during early pregnancy could provide clues for the 753 participants who experienced a hypertensive disorder of pregnancy. The conditions assessed included gestational hypertension, marked by high blood pressure that typically develops after 20 weeks of pregnancy, and preeclampsia, a significant rise in blood pressure after 20 weeks of pregnancy that can damage organs and is marked by elevated levels of protein in the urine.

The prediction models, which included three different types of assessments, did not significantly improve risk predictions for these events. If the models did show predictive ability, they did not drastically improve criteria physicians currently use to assess risks. These criteria currently include risk factors such as having obesity, diabetes, high blood pressure, or a baby later in life.

Researchers additionally found that participants with higher levels of quiescin sulfhydryl oxidase1 (QSOX1), a protein indicative of cellular growth, during early pregnancy were two-times less likely to experience a hypertensive disorder of pregnancy. Yet, other studies have found that higher levels of QSOX1 in late pregnancy have been linked to increased risks. Therefore, the researchers note this finding may inform research to further study related pathways of hypertensive disorders of pregnancy.

Hypertensive disorders of pregnancy affect about 10–15% of people and are associated with increased risks for having a pregnancy complication, heart attack, stroke, and in severe cases, death. The authors note while the finding is negative, it helps show that other approaches are needed to better predict who might experience high blood pressure during pregnancy.

More information: Greenland P et al. Large-scale proteomics in early pregnancy and hypertensive disorders of pregnancy. *JAMA Cardiology* (2024). DOI: 10.1001/jamacardio.2024.1621, jamanetwork.com/journals/jamac … /fullarticle/2820249

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