Biomarkers in maternal blood can identify pregnant women with lupus at low risk for adverse outcomes

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Pregnant women with systemic lupus erythematosus (SLE), are at higher risk for adverse pregnancy outcomes, including preeclampsia, placental insufficiency, fetal death, miscarriages, and other complications. In a study published in the *American Journal of Obstetrics & Gynecology*, a consortium of top researchers funded by NIH/NIAMS report that monitoring specific angiogenic biomarkers in maternal blood during early pregnancy can successfully predict patients who will likely have normal pregnancies and those at high risk for adverse outcomes. This will enable physicians to identify, counsel, and manage high risk patients at an early stage of pregnancy.

SLE is a multisystem autoimmune disease that predominantly affects women and presents during their childbearing years. In SLE the immune system that normally protects against infection turns against the woman and can cause damage to multiple organs. Another condition, antiphospholipid antibodies (APL), which can occur in patients with or without SLE, can damage the placenta and cause arterial and venous thromboses. Both of these conditions, whether occurring separately or together, can lead to fetal death, miscarriages, preeclampsia, and/or growth restricted babies.

"Given that over 20% of pregnant women with lupus APL experience adverse pregnancy outcomes, the ability to identify patients early in pregnancy, who are destined for poor outcomes, would significantly

impact care of this high risk population," explained lead investigator Jane E. Salmon, MD, of the Division of Rheumatology, Hospital for Special Surgery, and Weill Cornell Medical College, New York, NY.

Using data and samples from the PROMISSE Study (Predictors of pRegnancy Outcome: bioMarker In antiphospholipid antibody Syndrome and Systemic lupus Erythematosus) investigators found that biomarkers, specifically circulating angiogenic factors that regulate development of the placenta and influence the health of blood vessels in the mother, can be assessed early in pregnancy. As early as 12-15 weeks into pregnancies, changes in these biomarkers can signal an increased risk for severe complications, including preeclampsia before 34 weeks gestation, fetal or neonatal death, or preterm delivery before 30 weeks, because of placental insufficiency.

The researchers also found that measuring these biomarkers had a high negative predictive value, meaning that severe complications could actually be ruled out in most patients, leading to more appropriate prenatal care and less anxious patients. "Timely risk stratification of patients is important for effective clinical care and optimal allocation of healthcare resources," commented Dr. Salmon.

The PROMISSE Study is the largest multicenter, multiethnic and multiracial study to prospectively assess the frequency of adverse pregnancy outcomes. In this research, 497 pregnant patients with SLE and/or APL were enrolled at