

Gene that helps regulate immune system is linked to preeclampsia, researchers find

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(PhysOrg.com) -- Researchers at North Carolina State University have discovered that the placentas of women who suffer preeclampsia during pregnancy have an overabundance of a gene associated with the regulation of the body's immune system. Their discovery may lead to improved screening and prenatal care for these patients and their babies.

Preeclampsia occurs in up to 10 percent of all pregnancies, and is responsible for about 15 percent of pre-term births. The disorder is usually marked by a rapid rise in blood pressure that can lead to stroke, seizures or organ failures in the mother. Researchers have recently begun looking at preeclampsia as an autoimmune disorder, in which the mother's body treats the placenta like an invader, but they weren't sure of the genetic mechanisms involved.

Dr. Jorge Piedrahita, professor of genomics, along with colleagues from NC State and the Duke University School of Medicine, examined the genetic makeup of placentas from women with preeclampsia and compared the results to those from normal pregnancies. Their results are published in the February issue of the journal [Placenta](#).

“When we looked at the preeclamptic placentas, we found that several genes associated with a particular autoimmune pathway were ‘upregulated’ – basically, that there were more of them in placentas of preeclamptic women than in normal placentas,” Piedrahita says. “More specifically, we found the upregulation of a particular enzyme involved in sialic acid modification called SIAE. Sialic acid coats every cell in our

body, making it possible for our [immune system](#) to distinguish ‘self’ from ‘not-self.’ If this process is disrupted, the body can end up attacking itself.”

The researchers were excited by this finding because SIAE has recently been linked to autoimmune diseases like rheumatoid arthritis and type I diabetes.

“Prior to this research, we knew that there was an autoimmune cascade effect with preeclampsia, but we didn’t know where it originated,” Piedrahita adds. “Now we know that dysregulation of SIAE helps start the cascade. We’ve been able to fill in the blanks, and hopefully pregnant women and their babies will benefit as a result.”

The research was funded by a grant from the National Institutes of Health. The Department of Molecular Biomedical Sciences and the Center for Comparative Medicine and Translational Research are part of NC State’s College of Veterinary Medicine.

More information: “Transcriptional profiling of human placentas from pregnancies complicated by preeclampsia reveals dysregulation of sialic acid acetyltransferase and immune signalling pathways” Authors: J.A. Piedrahita, S. Tsai, N.E. Hardison, A.A. Motsinger-Reif, S.R. Bischoff, North Carolina State University; B.H. Thames, A.H. James, Duke University School of Medicine. Published: February, 2011 in *Placenta*.

Provided by North Carolina State University

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