

Research could lead to a new test to predict women at risk of pregnancy complications

September 2 2013

Researchers from The University of Manchester and Central Manchester University Hospitals NHS Trust have identified proteins in the blood that could be used to predict whether a woman in her first pregnancy is at increased risk of developing pre-eclampsia.

Pre-eclampsia is a [complication of pregnancy](#) where the mother develops [high blood pressure](#) and [protein](#) is present in the urine. In some cases, this can develop into a serious condition for both mother and baby and the only cure is delivery of the baby, often prematurely.

Women who have had pre-eclampsia previously are at higher risk of recurrence and are closely monitored during pregnancy, but there is no way of determining who is at high risk in first-time mothers.

The researchers, led by Dr Richard Unwin and Dr Jenny Myers from the Manchester Biomedical Research Centre, a partnership between the Trust and the University analysed samples which had been collected as part of the international SCOPE study (www.scopestudy.net) at 15 weeks of pregnancy - before any clinical signs of disease are present. Proteins were identified which differed between those women who developed pre-eclampsia and those who did not.

Three of these proteins were studied further in a larger number of [pregnant mothers](#) using a new method that allows the levels of several proteins to be measured at once. Two proteins, which have not previously been linked to pre-eclampsia risk, were shown to be at least as

good a predictor of [disease risk](#) as the current best marker, placental growth factor,. These two new potential markers are called [pregnancy specific glycoprotein 5 and 9 \(PSG5 and PSG9\)](#).

The findings will have a significant impact for identifying the condition in first time pregnancies, researchers believe.

Dr Myers, from the Institute of Human Development at The University of Manchester and the Maternal and Fetal Health Research Centre at Saint Mary's Hospital, said: "We hope that these two new markers will be of benefit in the future for women at risk from pre-eclampsia to allow early intervention and/or closer monitoring.

"We also hope to understand the biology of the disease better by determining why these proteins are higher in women with pre-eclampsia and whether they have a role in the development of the placenta."

Dr Unwin, from the Centre for Advanced Discovery and Experimental Therapeutics (CADET) at the Manchester Biomedical Research Centre, said: "What we have also done here is to develop a suite of laboratory methods which can identify and begin to validate real disease markers from patient blood samples, even before symptoms have developed, and we are hoping to continue applying these methods to other major diseases, such as diabetes, Alzheimer's disease or stroke."

The research, published in the journal *Molecular and Cellular Proteomics*, also involved members from Manchester Academic Health Science Centre (MAHSC) a partnership between the University and six leading NHS Trusts which aim to help health care organisations reap the benefits of research and innovation to drive improvements in care.

More information: Blankley, R. et al. (2013) A label-free SRM workflow identifies a subset of pregnancy specific glycoproteins as

novel putative predictive markers of early-onset pre-eclampsia.
Molecular and Cellular Proteomics. In press.

Provided by University of Manchester

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