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News Article

Research reveals early warning signs of preeclampsia

Research initiated at The University of Auckland has identified a set of proteins in the blood of pregnant women that may predict the development of preeclampsia.

"The discovery of these biomarkers opens the way for development of a potential screening test for preeclampsia," says lead investigator Professor Robyn North. At present there is no method to identify first-time mothers who will develop the serious condition.

"If women at high risk of preeclampsia could be identified early in pregnancy, they could be offered intervention to prevent it and more intensive monitoring to enable earlier detection of the condition. Earlier detection would prevent some women developing severe complications such as seizures, liver impairment and kidney failure."

Preeclampsia occurs in between 4% and 7% of first pregnancies. It affects around 1,650 New Zealand women each year and 8 million women worldwide, and is potentially life-threatening for mother and child.

It typically occurs late in pregnancy but, according to the research, women who develop preeclampsia have altered blood proteins at a much earlier stage.

The findings come from the landmark SCOPE (Screening of Pregnancy Endpoints) study, an international screening study of pregnant women. Women participating in SCOPE provided blood samples at 20 weeks of gestation and the outcome of their pregnancy was followed.

The blood protein profile of women who went on to develop preeclampsia was found to be significantly different than those who had uncomplicated pregnancies. A set of 33 proteins were present at abnormal levels prior to development of preeclampsia, and could form part of a future test to classify which women are at risk of preeclampsia or not.

The proteins identified will now undergo further investigation in validation studies involving several thousand women.

Preeclampsia is believed to be caused by substances released from the placenta that trigger problems in the mother's circulation. The proteins identified in the research are consistent with the biological processes thought to contribute to preeclampsia, providing further insight into how it may develop.

"The proteins also overlap with those bound to so-called 'good' cholesterol," says Professor North. "Women who develop preeclampsia are at increased risk of cardiovascular disease, and our findings hint at how the two conditions may be linked."

The results have been published by Dr Marion Blumenstein and other members of the SCOPE team. The article will soon appear in the journal Proteomics, and are already available online: <http://www3.interscience.wiley.com/journal/104534115/issue>

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Notes

The SCOPE study, underway at six universities around the world, was initiated at The University of Auckland's School of Population Health by Professor Robyn North and Associate Professor Lesley McCowan. Its primary aim is to develop screening tests to predict preeclampsia, small for gestational age infants, and spontaneous preterm birth.

Preeclampsia typically occurs late in pregnancy and the only 'cure' is delivery. A third of babies affected are born prematurely and a quarter of babies are smaller than normal for their age at delivery.

Preterm birth is the second most common cause of infant death in the first month of life, and is associated with a range of serious long-term conditions. Children born at below ideal birth weight may experience a variety of problems throughout their lives, including being at increased risk of cerebral palsy and developmental delay.

The current lack of a screening test for preeclampsia, and the absence of early symptoms in most cases, means that many women may not know they are affected until elevated blood pressure or protein in the urine is detected at a routine antenatal visit.

More information about preeclampsia can be found at www.preeclampsia.org

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Press releases

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