Team announces 'predictor' for pregnant women who may have miscarriages

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A medical team from the University of Leicester has been able to establish for the first time a predictor for pregnant women who may have miscarriages and those who won't. Their research is published in the highly prestigious *Journal of the American Medical Association*.

The researchers measured the levels of a naturally occurring 'cannabis' (an endocannabinoid) known as anandamide in women who presented with a threatened miscarriage (bleeding in early pregnancy with a viable baby) and found that those who at the time of the test had significantly higher levels of anandamide subsequently miscarried.

Professor Justin Konje, who heads the Endocannabinoid Research Group of the Reproductive Sciences Section in the Department of Cancer Studies and Molecular Medicine at the University of Leicester, said: "We are extremely excited by these findings. Essentially, we have for the first time been able to use the levels of this naturally occurring cannabis, anandamide in 45 women presenting with threatened miscarriage and a viable pregnancy to predict the eventual outcome of the pregnancy. Using a threshold we defined from this study, we were able to predict all the women who then went on to have a subsequent miscarriage and 94% of those who went on to have a live birth.

"This is the first time that this has been reported. It has very significant implications and if the results are replicated, we would eventually be able to reassure women who present with bleeding in early pregnancy about the outcome of their pregnancies.

“Obviously for those whose pregnancies are identified by this measurement as destined to end in a miscarriage, knowing this may cause grief and upset but it may also help them to come to terms quickly with the outcome of the pregnancies.

“This is the first stage of this study but the results are very encouraging and we are undertaking further studies to confirm our observations. Once these are confirmed, we plan to develop a bed-side test which could then be applied in clinical practice.”

In the paper, the authors state that approximately 40%-50% of all human conceptions are lost before 20 weeks of gestation. They conclude:

“In this pilot study of women with threatened miscarriage, high plasma anandamide level was associated with subsequent miscarriage. The study is limited by the small number of participants and requires replication in larger and more diverse populations. Compared with tests based on peripheral blood mononuclear cells, anandamide-level measurement has an advantage of being based on whole blood and not requiring separation. If established as valid and clinically practical, anandamide measurement has the potential for improving the prediction and counselling of women presenting with threatened miscarriages.”

Professor Konje based at the Leicester Royal Infirmary, carried out the study with Osama Habayeb, Anthony H. Taylor, Mark Finney and Mark D. Evans. Professors David Taylor and Stephen Bell and Dr Marcus Cooke of the University of Leicester also contributed to the study.

The study was funded by income from the University Hospitals of Leicester NHS Trust and by PerkinElmer through a grant to support the Endocannabinoid Research Laboratory of Dr Konje. The British United Provident Association (BUPA) Foundation funded some of the consumables used for the laboratory analysis.

Professor Konje has been researching the levels of compounds produced by the human body, which are very similar to cannabis, for a number of years. Previously, his team reported than the levels of these endocannabinoids fall during the early period of pregnancy and rise towards term. Measuring the endocannabinoid level in women who were delivering preterm, Professor Konje and his team discovered that the level of endocannabinoids was four times higher in those who went on to deliver compared to those who did not.

Since a large number of women go into hospital with preterm labour, but only a few actually go on to have premature babies, this may be one of the most reliable ways of distinguishing those who are going into early labour from those whose contractions will subside until later in the pregnancy.

The implications for this are highly significant, both in health management and in cost-effectiveness. Professor Konje commented: “When women present with preterm labour, we need a test to tell us which ones will deliver and which ones will not so that we can plan their management.

“But there is also a major cost factor in the management of these women and babies. In the UK 8% of babies are delivered prematurely but many more women present with signs of preterm labour. A day on the intensive care unit costs £1,000-£1,500, so knowing who actually needs this level of care would be a major step forward.”

Currently, it can take 12 hours to get results from a blood test. His research aims to develop a means of monitoring monoclonal antibodies which could deliver the same result in 10-15 minutes.

Source: University of Leicester