Pre-eclampsia (PE) is one of the most serious disorders of pregnancy. European and central Asian researchers joined forces to deliver the largest study on the genetic basis of PE.

Approximately 10% of women develop high blood pressure (hypertension) during pregnancy. When this is accompanied by kidney malfunction and loss of protein in the urine, this condition is known as PE and can endanger the lives of pregnant women and their babies. Although medication may control hypertension, the only cure for PE is to deliver the baby. However, the combined risks of poor intrauterine growth and prematurity lead to high mortality.

Therefore, for best antenatal care it is of the utmost importance to identify the women at highest risk of PE at an early stage. Women at high risk of PE include those with a previous affected pregnancy, predisposing medical conditions or a family history of PE. Evidence indicates that a family history of PE in a pregnant woman or her partner nearly triples the chances of having the condition.
The EU-funded INTERPREGGEN (Genetic studies of pre-eclampsia in central Asian and European populations) project set out to discover changes in DNA in mothers, fathers and babies of families affected by PE in order to identify PE predisposition factors.

For this purpose, researchers performed genome-wide association screening of the DNA of 15,600 women and 8,600 babies from pregnancies affected by PE. They used a genotyping chip to test 1 million single nucleotide polymorphisms and the results were compared to the genetic make-up of 300,000 controls. They also examined the DNA of fathers of babies affected by PE to determine the parent from whom the variant was inherited.

The INTERPREGGEN investigation revealed several DNA variants in women that are associated with hypertension in pregnancy. In addition, DNA variants were discovered for the first time in the baby that predispose to PE. The consortium used the clinical and genetic data to generate a single database as a powerful resource for testing risk prediction models.

Overall, the study results provide new insights into the mechanism of PE. They will stimulate novel areas of research, ultimately leading to new approaches to the prediction, prevention and treatment of PE.

**Keywords**

Pre-eclampsia, pregnancy, hypertension, family history, INTERPREGGEN, genotyping

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