There was an agreement to define early-onset pre-eclampsia as that occurring before 34 weeks.

The results of this survey can help in updating the previous ISSHP classification.

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Maternal circulating PlGF concentrations and placenta-related pregnancy complications: First results from the CoLab AngF Study

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Introduction: Circulating angiogenic factors are potential markers for preeclampsia, but heterogeneous studies have failed to identify precise predictive/diagnostic properties. The Global CoLaboratory is investigating how to merge published data of angiogenic factors for meta-analysis on an individual sample basis.

Objective: To amalgamate pregnancy angiogenic factor studies, investigate diagnostic and predictive properties of these markers in preeclampsia and placenta-related pregnancy complications, and to test if measures from disparate platforms can be standardised. This is the first report using PlGF measures to diagnose preeclampsia.

Methods: Data were derived from 15 cohorts, within and outside the CoLaboratory network. Women were classified as either case (confirmed diagnosis of preeclampsia at sampling) or non-case (no preeclampsia at sampling). Individual PlGF measurements from four different analytical platforms were used, along with transformations of the data (e.g. log-transformations, transformations to a baseline platform). Transformed measurements were standardised both for specific platforms and globally, stratifying on gestational age. Different statistical techniques were compared.

Results: The database currently contains 1442 cases and 11,512 non-cases, which were used to define an algorithm to merge PlGF measurements from different platforms. Non-case distributions were used to standardise case results. Diagnostic PlGF measurements in relation to pre-eclampsia will be presented and confirm feasibility.

Conclusions: Future studies can extend this approach to other angiogenic factors, prediction as well as diagnosis and to other placenta-related disorders.

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Developing potential biomarkers for preeclampsia: Why is the current strategy failing?

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During the last decade major progress has been achieved in identifying new predictive biomarkers as well as setting up screening strategies for preeclampsia. A number of biochemical markers in combination with biophysical markers coupled to patients' demography and clinical history were identified and have been used in a number of studies. The combination of independent markers with various demographic and multivariate algorithms should have led to stratification of the risk to develop preeclampsia. However, today studies are still ongoing mostly focusing on a single marker and its performance for the early subtype of preeclampsia, which makes up only about 20% of all preeclampsia cases.

While it is hard to forecast how medicine will progress, it has been the hope that a combination of risk stratification with large international randomised studies validating various prediction methods would enable new studies to identify preventive methods as well. This would have led to a significant revolution in the way pregnancy is managed to prevent preeclampsia. However, looking back on all the studies on markers such as soluble endoglin, placental protein 13 (PP13), placental growth factor (PlGF), vascular endothelial growth factor (VEGF) and soluble VEGF receptor-1 (sVEGF-R1 or sFlt-1) today pregnant women destined to develop preeclampsia are still suffering from the lack of any commonly accepted preventive therapy. Putative reasons for this failure of predictive biomarkers will be discussed in this talk.

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Update on genetics of pre-eclampsia

Linda Morgan (University of Nottingham, UK)

Over half of the familial predisposition to pre-eclampsia can be attributed to genetic factors in the mother and/or fetus. The search for genetic susceptibility variants has progressed through candidate gene studies, family-based linkage studies, and most recently genome-wide association studies (GWAS). It is unlikely that any single variant has a large effect on pre-eclampsia susceptibility; studies involving thousands of samples are required to detect variants with small effect size. These exceed the resources of most individual research groups, and collaborative approaches are likely to be more fruitful.

Collaboration has included meta-analysis of existing data, and recent publications offer some support to a role for thrombophilic polymorphisms in pre-eclampsia. A small number of GWAS have been published so far; the lack of replication of positive GWAS results in an independent population has been frustrating. This may be due to false positive results in the original GWAS, or lack of statistical power in the replication set. A further concern is that the pre-eclampsia syndrome is a common end-point to multiple pathologies with differing underlying genetic susceptibility, requiring ever larger sample sizes for their detection.

In this climate, researchers should make every effort to record the phenotypic characteristics of their cohorts, to enable meta-analysis of independent GWAS results. The InterPregGen consortium of groups from Europe and Central Asia is conducting GWAS analysis of maternal and fetal genes in 13,000 pre-eclamptic pregnancies. This study will provide the opportunity to analyse maternal-fetal gene interactions in addition to their individual effects.