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PlGF as a diagnostic test for pre-eclampsia

Submission date
18/05/2016

Recruitment status
No longer recruiting

Registration date
19/05/2016

Overall study status
Completed

Last Edited
08/04/2019

Condition category
Pregnancy and Childbirth

[X] Prospectively registered

[_] Protocol

[_] Statistical analysis plan

[X] Results

[_] Individual participant data

Plain English summary of protocol

Background and study aims
Pre-eclampsia (PE) is a medical condition which can develop during pregnancy, and can affect both the mother and unborn baby. The exact cause of PE is not known, however it is thought to happen because of a problem with the placenta. The placenta is a specialised organ which connects the mother's blood supply to the baby's, providing the baby with food (nutrients) and oxygen. In PE, it is thought that the blood supply to the placenta is reduced, which can mean the unborn baby does not get enough nutrients to develop properly. The key indicators of PE are high blood pressure and protein in the mother's urine. In order to identify as many cases as possible, all women have their blood pressure and urine monitored throughout pregnancy. If PE is diagnosed, the only cure is to deliver the baby. If this occurs before 37 weeks of pregnancy, the mother may need to be admitted to hospital for blood pressure treatment and monitoring for complications, whilst planning for safe delivery of the baby. Some women become unwell very quickly and need to have their babies delivered, while others have long stays in hospital for monitoring. It is not always possible to identify women at high risk of the severe complications of pre-eclampsia needing early delivery. This study will look at levels of a protein produced by the placenta called Placenta Growth Factor (PlGF). Previous studies have shown that women with very low PlGF levels are at greater risk of severe PE and stillbirth. The aim of this study is to find out whether measuring PIGF is a good predictor of PE

Who can participate?
Women who are between 20 and 36 weeks pregnant with suspected PE

What does the study involve?
All participants give an extra sample of blood at the time of assessment by their doctor or midwife for a PlGF blood test. The result of the test is revealed to the clinician at a randomly allocated timepoint, when the clinicians may then use the revealed result to help determine the management of the pregnancy, to help plan care for the participant. Participants at high risk of adverse events may receive intensive assessment and admission, and those at low risk are reassured and returned to routine care.

What are the possible benefits and risks of participating?
There are no anticipated risks to those taking part in the study.

Where is the study run from?
1. Guy's and St Thomas' NHS Foundation Trust (UK)
2. St George's University Hospitals NHS Foundation Trust (UK)
3. Kingston Hospital NHS Foundation Trust (UK)
4. West Middlesex University Hospital (UK)
5. Central Manchester University Hospital NHS Foundation Trust (UK)
6. Liverpool Women's NHS Foundation Trust (UK)
7. Leeds Teaching Hospitals NHS Trust (UK)
8. Bradford Teaching Hospitals NHS Foundation Trust (UK)
9. Royal United Hospitals Bath (UK)
10. North Bristol NHS Trust (UK)
11. University Hospitals Bristol NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?
April 2016 to March 2018

Who is funding the study?
National Institute for Health Research (UK)

Who is the main contact?
Dr Kate Duhig

Contact information

Type(s)
Public

Contact name
Dr Kate Duhig

Contact details
Womens Health
St Thomas' Hospital
London,
United Kingdom
SE1 7EH

Additional identifiers

Protocol serial number
30737

Study information

Scientific Title
PARROT - Placental growth factor to Assess and diagnose hypeRtensive pRegnant wOmen: a stepped wedge Trial

Acronym
PARROT

Study objectives
The aim of this study is to compare the time it takes from presentation with suspected pre-eclampsia to a confirmed diagnosis with the addition of Placental Growth Factor (PlGF) testing as compared to conventional practice.

Ethics approval required
Old ethics approval format

Ethics approval(s)
South London Research Ethics Committee, 21/01/2016, ref: 15/LO/2058

Primary study design
Interventional

Study design
Stepped-wedge designed multicentre randomised controlled trial

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Specialty: Reproductive health and childbirth, Primary sub-specialty: Reproductive and sexual medicine; UKCRC code/ Disease: Reproduction/ Other disorders originating in the perinatal period

Interventions
The trial is a stepped-wedge cluster randomisation trial, and all units will begin recruiting to the ‘not revealed’ phase at the trial beginning. The step-lengths are 5 weeks, with a new site chosen at random to transition to become ‘revealed’ to the test at each step.

In the 'not revealed' phase, all women presenting with suspected preeclampsia will be consented for a blood test, the result of which is not revealed to the clinician, and women are managed according to NICE guidelines on the management of hypertensive disorders of pregnancy (NICE 2010).

After transition to the 'revealed' PlFG testing at the randomly allocated timepoint, the clinicians may use the revealed PlGF result as additional information to inform the clinical picture and determining antenatal care incorporated into NICE guidelines.

Those at high risk of adverse events may be streamlined for intensive assessment and admission, and those at low risk reassured and returned to routine antenatal surveillance.

Follow up for all patients is to postnatal discharge of both mother and baby.

Intervention Type
Other

Primary outcome(s)
Time from first presentation with hypertension to antenatal services to having a confirmed, documented diagnosis of pre-eclampsia (as defined by ISSHP 2014 statement). The time points

of evaluation are first presentation with suspected disease to confirmed diagnosis of pre-eclampsia. This is a participant level outcome.

Key secondary outcome(s)

Current secondary outcome measures as of 08/06/2018:
Secondary short-term maternal outcomes:
1. Test performance of the PlGF (vs. currently utilised tests) for clinically indicated delivery for diagnosed pre-eclampsia within 14 days
2. Systolic blood pressure ≥160 mmHg
3. Progression to severe pre-eclampsia (as defined by ACOG)
4. Placental abruption
5. Mode of onset (spontaneous, induced or pre-labour caesarean section)
6. Mode of delivery (spontaneous vaginal delivery, assisted vaginal delivery, caesarean section)
7. A composite of maternal adverse outcomes as defined by the fullPIERS consensus

Additional descriptive secondary short-term maternal/fetal outcomes:
1. Maternal death
2. Use of anti-hypertensive drugs
3. Eclampsia
4. Disseminated intravascular coagulation
5. Pulmonary oedema
6. Antepartum haemorrhage
7. Postpartum haemorrhage
8. Estimated fetal weight (on ultrasound scan) <10th centile post-enrolment
9. Absent or reversed end diastolic flow (on umbilical artery Doppler) post-enrolment
10. Primary and additional indications for delivery (maternal hypertension not controlled by maximal therapy, biochemical abnormality, haematological abnormality, fetal compromise on ultrasound scan, fetal compromise on cardiotocography, severe maternal symptoms, 37 weeks' gestation or specified other)

Secondary short-term perinatal outcomes:
1. Gestational age at delivery
2. Stillbirth
3. Neonatal death prior to hospital discharge
4. Preterm birth (<37 weeks' gestation)
5. Neonatal unit (NNU) admission for at least 4 hours
6. Birth weight
7. Birth weight centile
8. Apgar scores at 5 minutes post birth

Additional descriptive secondary short-term perinatal outcomes:
1. Necrotizing enterocolitis (Bell's stage 2 and 3)
2. Retinopathy of prematurity
3. Intraventricular haemorrhage
4. Umbilical arterial pH at birth
5. Need for supplementary oxygen prior to discharge
6. Need for ventilation support (CPAP/high flow/endotracheal ventilation)
7. Abnormal cerebral ultrasound scan
8. Confirmed sepsis (positive blood or cerebrospinal fluid cultures)
9. Seizures (confirmed by EEG or requiring anticonvulsant therapy)
10. Encephalopathy grade (worst at any time: mild, moderate, severe)
11. Other indications and main diagnoses resulting in NNU admission for at least 4 hours

The timepoints of evaluation of the secondary outcomes are taken at the clinic visits, during admission for delivery up to discharge home of mother and infant.

Previous secondary outcome measures, added 04/01/2017:
Secondary short-term maternal outcomes:
1. Test performance of the PlGF (vs. currently utilised tests) for clinically indicated delivery for diagnosed pre-eclampsia within 14 days
2. Systolic blood pressure ≥160 mmHg
3. Progression to severe pre-eclampsia (as defined by ACOG)
4. Placental abruption
5. Mode of onset (spontaneous, induced or pre-labour caesarean section)
6. Mode of delivery (spontaneous vaginal delivery, assisted vaginal delivery, caesarean section)

Additional descriptive secondary short-term maternal/fetal outcomes:
1. Maternal death
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3. Eclampsia
4. Disseminated intravascular coagulation
5. Pulmonary oedema
6. Antepartum haemorrhage
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10. Encephalopathy grade (worst at any time: mild, moderate, severe)
11. Other indications and main diagnoses resulting in NNU admission for at least 4 hours

The timepoints of evaluation of the secondary outcomes are taken at the clinic visits, during admission for delivery up to discharge home of mother and infant.

Completion date
31/03/2018

Eligibility

Key inclusion criteria
1. Women between 20+0 and 36+6 weeks' of gestation
2. Suspected pre-eclampsia
3. Viable fetus
4. Singleton
5. Aged 18 years or over
6. Able to give written informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
Confirmed diagnosis of preterm pre-eclampsia at the point of enrolment

Date of first enrolment
13/06/2016

Date of final enrolment
27/10/2017

Locations

Countries of recruitment
United Kingdom

England

Study participating centre

Guy's and St Thomas' NHS Foundation Trust
United Kingdom
SE1 7EH

Study participating centre
St George's University Hospitals NHS Foundation Trust
United Kingdom
SW17 0QT

Study participating centre
Kingston Hospital NHS Foundation Trust
United Kingdom
KT2 7QB

Study participating centre
West Middlesex University Hospital
United Kingdom
TW7 6AF

Study participating centre
Central Manchester University Hospital NHS Foundation Trust
United Kingdom
M13 9WL

Study participating centre
Liverpool Women's NHS Foundation Trust
United Kingdom
L8 7SS

Study participating centre
Leeds Teaching Hospitals NHS Trust
United Kingdom
LS1 3EX

Study participating centre

Bradford Teaching Hospitals NHS Foundation Trust
United Kingdom
BD9 6RJ

Study participating centre
Royal United Hospitals Bath
United Kingdom
BA1 3NG

Study participating centre
North Bristol NHS Trust
United Kingdom
BS10 5NB

Study participating centre
University Hospitals Bristol NHS Foundation Trust
United Kingdom
BS2 8HW

Sponsor information

Organisation
Guy's and St Thomas' NHS Foundation Trust (UK)

Organisation
King's College London (UK)

Organisation
Guy's and St Thomas' NHS Foundation Trust

ROR
https://ror.org/00j161312

Funder(s)

Funder type
Government

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	04/05/2019		Yes	No
HRA research summary			28/06/2023	No	No