ISRCTN86503951 https://doi.org/10.1186/ISRCTN86503951

Management of Mild Gestational Diabetes Mellitus (GDM)

Submission date
23/12/2013

Recruitment status
No longer recruiting

Registration date
08/01/2014

Overall study status
Completed

Last Edited
30/11/2020

Condition category
Pregnancy and Childbirth

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[X] Results
[ ] Individual participant data

Plain English summary of protocol

Background and study aims
Recent international guidelines have suggested that the threshold used to diagnose gestational diabetes (GDM) in pregnancy should be lowered. The most common complication which arises as a result of GDM is a large baby, which can be associated with birth complications and long-term health problems for the infant. As a result, most women with GDM are monitored very intensively and often delivered before their due date. Two previous studies have confirmed that treatment of GDM (diagnosed using higher blood glucose values) can reduce the size of the baby. However, the benefit and potential harm, which includes increased interventions associated with a diagnosis of GDM, have not been assessed in women with lower levels of blood glucose.This initial small study aims to assess the acceptability and feasibility of using a simple treatment with tablets (metformin) for women with mild GDM. Metformin is safe in pregnancy and has the advantage that frequent blood glucose monitoring is not necessary. We hope this treatment will be effective in reducing the number of babies which gain excessive weight in pregnancy, without the need for frequent hospital visits and high intervention rates . Anxiety levels and differences in attitudes between different ethnic groups will also be studied. The recruitment rates and the assessment of the effectiveness of metformin in this study will allow us to plan a larger study which will be able to determine whether metformin treatment is cost effective for the treatment of mild GDM.

Who can participate?
Pregnant women with mild gestational diabetes will be asked to participate.

What does the study involve?
Participants will be randomly allocated to receive either metformin treatment only or standard care. Women allocated to metformin treatment will be prescribed metformin tablets from 26-28 weeks gestation and will stop once they have delivered their baby. They will also complete a questionnaire at the first visit in addition to receiving standard dietary advice. Blood samples will be taken to measure glucose and insulin. Women will be asked to attend again at 36 weeks. Two further questionnaires will be completed in addition to further blood samples. Women allocated to receive standard care will complete the same questionnaires at the first visit and receive standard dietary advice. Women will be taught how to perform home blood glucose monitoring before and 1 hour after meals. Following the first visit they will be asked to attend

every two weeks as per standard care. Women with blood glucose above target will be treated with metformin and insulin if necessary.

What are the possible benefits and risks of participating?
Women will receive treatment which will help to normalise blood glucose levels during their pregnancy. This may reduce the risk of a large baby.Participation in this study will take up some time. Women in the standard care group will be asked to attend the research clinic every 2 weeks and to perform finger prick tests to check blood sugar levels. All participants will be asked to take the time to complete questionnaires. Blood samples will be taken but where possible we will take these alongside routine blood tests as part of your antenatal care. Women may be asked to take additional medication; metformin or insulin depending on the group they are allocated to. Both these medications are used routinely in pregnant women around the world and research has shown that these medications are safe at this stage of pregnancy. There have not been any reports of metformin causing harm to the baby when taken during pregnancy, although we can never absolutely guarantee the safety of any medication during pregnancy. Metformin can sometimes cause some stomach upset (sickness and diarrhoea) so the dose will be increased slowly to minimise this side effect. Metformin can also cause taste disturbance and affect appetite. There is a very rare (<1 out of 10,000), but serious side effect of metformin called lactic acidosis. This occurs in individuals with kidney or liver problems. We will perform a blood test at the beginning of the study to ensure that women do not have any liver or kidney problems before the metformin tablets are commenced to ensure that the treatment is safe. Other very rare side effects include skin rashes.

Where is the study run from?
This is a single-centre study running at St Marys Hospital, Manchester, UK.

When is the study starting and how long is it expected to run for?
The study started in January 2014 and will run for 12 months.

Who is funding the study?
Central Manchester University Hospitals NHS Foundation Trust, UK.

Who is the main contact?
Dr Jenny Myers
Jenny.myers@manchester.ac.uk

Contact information

Type(s)
Scientific

Contact name
Dr Jenny Myers

Contact details
St Mary's Hospital
Oxford Rd
Manchester
United Kingdom

M13 9WL
+44 161 276 1234
jenny.myers@manchester.ac.uk

Additional identifiers

EudraCT/CTIS number
2013-004065-13

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
Metform02

Study information

Scientific Title
Metformin treatment vs a diabetes model of antenatal care in women with mild fasting hyperglycaemia diagnosed in pregnancy: a pilot study

Acronym
Mild GDM

Study objectives
Metformin (in conjunction with standard antenatal care) is an acceptable and effective treatment for mild gestational diabetes.

Ethics approval required
Old ethics approval format

Ethics approval(s)
1. North West Ethics Committee, UK, Ref. 13/NW/0755
2. Medicines and Healthcare Products Regulatory Agency (MHRA)

Study design
Investigator-led open-label randomised controlled pilot trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
GP practice

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet

Health condition(s) or problem(s) studied
Gestational Diabetes

Interventions
Block randomisation with prefilled sealed envelopes created by independent research midwives within the department. Sealed envelopes will be opened following recruitment into the study and allocation of study number.

Women randomised to the study arm (Metformin only treatment arm) will be prescribed metformin tablets up to 2000mg from randomisation (26-28 weeks gestation) and will stop once they have delivered their baby.
Women will be asked to start with 500mg metformin (1 tablet, Once Daily) taken with food, increasing on Day 4 by an increment of 500mg per day (in other words to 1 tablet, twice daily). Day 7: a further increment of 500mg per day (in other words to 1 tablet, three times daily). On Day 14, women will increase the evening dose of metformin by a further 500mg. If side effects (largely anticipated to be gastro-intestinal) are experienced, the woman should drop to the previous dose or 500mg metformin (whichever is the greater) and wait for 3 days before increasing the dosage again. The maximum recommended dose is 2000mg daily, taken as three divided doses. The usual starting dose is one tablet 2 or 3 times daily given during or after meals.

Women in the metformin only treatment arm will complete a questionnaire (State-Trait Anxiety Inventory) at the baseline visit in addition to receiving standard dietary advice. Blood samples to measure glucose and insulin (HOMA-IR) will be taken. Compliance will be assessed with a minimum of two phone calls. Women will be asked to attend again at 36 weeks. Two further questionnaires will be completed in addition to further blood samples and a further assessment of compliance (blister pack counting).

Women randomised to the standard care arm will complete the same questionnaires at the baseline visit and receive standard dietary advice. Women will be taught how to perform a home blood glucose monitoring (HBGM) before and 1 hour after meals. Following the baseline visit they will be asked to attend every two weeks as per standard care and treatment will be titrated to HBGM. Women with blood glucose above target (>5.5 mmol/L fasting and/or >7.5 mmol/L post meal) will be commenced on metformin as per the dosing regime above and supplementary insulin will be added where indicated by HBGM.

Intervention Type
Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Metformin

Primary outcome measure
Recruitment rates amongst different ethnic groups will be determined from the screening logs

Secondary outcome measures
1. Acceptability of the intervention will be assessed by questionnaire
2. The number of women in the standard arm of the trial who require insulin treatment in addition to metformin
3. Optimisation of data collection methods and variables will be performed at the end of the study
4. Assessment of anxiety levels and the perceived implications of a diagnosis of GDM will be determined by questionnaire

Overall study start date
07/01/2014

Completion date
31/12/2014

Eligibility

Key inclusion criteria
1. Women with risk factors for GDM (NICE 2008) will be offered an oral glucose tolerance test (OGTT) at 26 weeks gestation as part of their routine antenatal care. Women will be provided with written information regarding the study at the time of the OGTT.
2. Women with mild fasting hyperglycaemia (5.1-5.4 mmol/L, 2 hour <8.5 mmol/L) will be invited to participate.

Participant type(s)
Patient

Age group
Adult

Sex
Female

Target number of participants
60

Total final enrolment
40

Key exclusion criteria
1. Multiple pregnancy
2. Previous still-birth
3. Previous shoulder dystocia requiring obstetric manoeuvres
4. Age under 16
5. Incapacity to consent
6. A known hypersensitivity to metformin hydrochloride or to any of the excipients
7. Contra-indication to Metformin
8. Known abnormalities of the liver (tested at randomisation)
9. Renal failure or renal dysfunction
10. Acute conditions with the potential to alter renal function such as:

10.1. Dehydration
10.2. Severe infection
10.3. Shock
10.4. Intravascular administration of iodinated contrast agents
11. Acute or chronic diseases which may cause tissue hypoxia such as:
11.1. Cardiac or respiratory failure
11.2. Recent myocardial infarction
11.3. Shock
11.4. Hepatic insufficiency, acute alcohol intoxication, alcoholism
12. Lactation

Date of first enrolment
07/01/2014

Date of final enrolment
31/12/2014

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
St Mary's Hospital
Manchester
United Kingdom
M13 9WL

Sponsor information

Organisation
Central Manchester University Hospitals NHS Foundation Trust (UK)

Sponsor details
Oxford Rd
Manchester
England
United Kingdom
M13 9WL
+44 (0)161 7012690
george.georgiou@cmft.nhs.uk

Sponsor type
Hospital/treatment centre

Website
http://www.cmft.nhs.uk/

ROR
https://ror.org/00he80998

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Central Manchester University Hospitals NHS Foundation Trust (UK)

Results and Publications

Publication and dissemination plan
Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Basic results			23/06/2020	No	No
Results article	results	26/11/2020	30/11/2020	Yes	No
HRA research summary			28/06/2023	No	No