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Feasibility of faecal microbiota transplantation in the management of obesity and type 2 diabetes

Submission date
11/10/2018

Recruitment status
No longer recruiting

Registration date
15/11/2018

Overall study status
Completed

Last Edited
20/06/2019

Condition category
Nutritional, Metabolic, Endocrine

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
This study aims to test the feasibility of using a new intervention (personalised faecal microbiota transplantation) for the treatment of obesity and type two diabetes mellitus (T2DM). Globally, obesity has more than doubled in prevalence since the 1980s. In 2014 the World Health Organisation (WHO) estimated more than 600 million adults were obese. Currently there are an estimated 4.5 million people living with diabetes in the UK. Since 1996 the number of people diagnosed with diabetes has more than doubled. Obesity is the most potent risk factor for T2DM and accounts for 80-85% of the overall risk for developing T2DM. The recognised complications of obesity and T2DM include cardiovascular (heart) disease, kidney disease, limb amputations and blindness, which all subsequently lead to disability and premature death. The risk for these complications increases with an increase in body mass index (BMI). It is known that the fundamental cause of obesity is an energy imbalance between calories consumed and calories expended, but scientists and clinicians believe it is a much more complicated process than this. The gut microbiome consists of trillions of bacteria living within the bowel which play an important role in metabolism. There is an increasing amount of evidence showing changes in the normal microbial balance in obesity and diabetes. Bacteria associated with weight gain are thought to be able to turn on human genes related to lipid (fat) and carbohydrate metabolism, thereby leading to greater energy harvest from the diet. Changing the gut microbiota with faecal microbiota transplantation (FMT) could positively impact the obesity and T2DM epidemics. This would benefit a large number of patients and the cost-savings from secondary complications would be considerable. The aim of this study is to find out whether the transfer of microbiota (via faecal transplantation) from a matched lean healthy donor can induce a change in the microbiota of obese patients with T2DM.

Who can participate?
Patients aged 18-70 who are obese and have T2DM

What does the study involve?
Participants are randomly allocated to be treated with either personalised FMT (i.e. from a matched lean healthy donor), autologous FMT (i.e. from their own body), or dietary advice only.

FMT is delivered as a once only treatment through a nasojejunal tube that is passed through the nose into the small bowel. The study tests whether microbiota transfer leads to improvements in markers of obesity and blood sugar control.

What are the possible benefits and risks of participating?
Results from the study will be used by the research team to design a subsequent larger trial to establish the role of FMT in this patient group. Based upon previous published literature regarding FMT patients may see an improvement in their blood sugar control and BMI. Patients randomly allocated to one of the control groups may not improve as much as those receiving a FMT infusion from a matched donor, although it is well recognised that some improvements are often observed ('placebo effect'). There is a potential risk of microbial colonisation/infection with unknown microorganisms in the donor faeces that cannot be detected by the current identification methods. Although extremely rare, such a risk cannot be completely eliminated. All donors will have undergone extensive screening procedures according to the latest European Guidelines prior to stool collection to prevent any patients from being exposed to a known infectious disease or illness. Donor stool may cause symptoms such as (but not limited to) diarrhoea, abdominal pain, bloating, cramping and an urge to have a bowel movement, but this should only last for a short period of time. Nasojejunal tube placement is not painful but can be uncomfortable. The research team will provide privacy during the procedure and make the procedure as comfortable and tolerable as possible. The tube is placed carefully through one of the nostrils into the small intestine using an electromagnetic imaging device. Patients will be kept sitting upright for several hours after insertion of the tube and delivery of the FMT treatment. In addition to these risks, this treatment may cause harm in ways that are unknown. Complications may include but are not limited to the following: transmission of infectious organisms (bacterial, viral, fungal, parasitic) contained in the stool; allergic reaction to antigens in donor stool; and a theoretical increased risk of developing disease which may be related to donor gut bacteria or other microorganisms (obesity/metabolic syndrome, autoimmune conditions, allergic/atopic disorders, neurologic disorders, malignancy). This is NOT a complete list, and there may be unforeseen risks that cannot be anticipated at this time. Women who can get pregnant must have a negative pregnancy test before being allowed to join this study. The research team also require woman of childbearing potential to be using highly effective contraception for the duration of the study. Patients who think they are pregnant or become pregnant during the study must tell the study doctor because there may be risks to the baby if theyr continue in the study. If participants become pregnant within a month after receiving FMT, there may be additional risks. Some of these risks may be known, but some risks may not be known and may not be foreseeable. Because the risks to embryo/foetus/unborn babies and babies who are breastfeeding may not be known or foreseeable, pregnant women and nursing mothers are not allowed to receive FMT.

Where is the study run from?
Swansea University (UK)

When is the study starting and how long is it expected to run for?
January 2018 to August 2019

Who is funding the study?
Abertawe Bro Morgannwg University Health Board (UK)

Who is the main contact?
Prof. Dean Harris

Contact information

Type(s)
Scientific

Contact name
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Protocol serial number
Version 1.0, 28/05/2018

Study information

Scientific Title
Feasibility of faecal microbiota transplantation in the management of obesity and type 2 diabetes: a randomised feasibility study

Acronym
FMTODM

Study objectives
The primary aim is to test the feasibility of a future full trial of faecal microbiota transplant (FMT) in obesity and type 2 diabetes, test the recruitment rate of donors and patients for a study of FMT, determine the choice of endpoints for a future phase III trial; and establish the number of patients required at phase III to demonstrate efficacy of FMT in the treatment of obesity and type 2 diabetes.
Secondary aims include: estimating the magnitude of treatment response to FMT in obesity and T2DM.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Wales REC 06, 25/06/2018, REC ref: 18/WA/0143

Primary study design
Interventional

Study design
Single-centre prospective randomised interventional feasibility study

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Obesity (BMI >30 <40); type 2 diabetes mellitus (<24 months duration)

Interventions
30 individuals randomised 1:1:1 (10 patients in each arm):
10 patients to receive personalised FMT (intervention group) + dietary advice
10 patients to receive autologous FMT (control) + dietary advice
10 patients to receive dietary advice only (control)

FMT will be delivered as a once only treatment through a Cortrak placed nasojejunal tube.

Intervention Type
Biological/Vaccine

Primary outcome(s)
Measured once the study is completed (i.e. all 30 patients have been recruited):
1. The feasibility of a future full trial of FMT in obesity and type 2 diabetes
2. The recruitment rate of donors and patients for a study of FMT
3. The choice of endpoints for a future phase III trial
4. The number of patients required at phase III to demonstrate efficacy of FMT in the treatment of obesity and type 2 diabetes

Key secondary outcome(s)
The magnitude of treatment response to FMT in obesity and T2DM, measured using BMI, anthropometric measurements, blood tests and patient reported outcome measures at baseline and 12 weeks post intervention

Completion date
01/05/2020

Eligibility

Key inclusion criteria
1. Aged between 18-70
2. Ability to give informed consent
3. BMI > 30 but < 40
4. Confirmed T2DM (within 24 months)
5. Ability to undergo a full screening assessment
6. Willingness to receive FMT via the nasojejunal route

7. Negative pregnancy test (if applicable)
8. Women of childbearing potential agree to use highly effective contraception measures until trial ends

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Upper age limit
70 Years

Sex
All

Key exclusion criteria
1. Abdominal tenderness on examination
2. BMI < 30 > 40
3. No evidence of T2DM or diagnosis of T2DM > 24 months
4. No clinical diagnosis of T1DM
5. Contraindication to receiving oral bowel preparation
6. Allergy to antibiotics used by the study
7. Age < 18 > 70
8. Allergy to proton pump inhibitor
9. Patient classed from vulnerable group
10. Previous GI / bariatric surgery
11. Contraindication to naso-jejunal tube placement
12. Pregnant
13. Immuno-suppressed
14. Known communicable disease; at least two weeks post full recovery from infectious disease
15. Systemic autoimmunity or atopic disease
16. Previous prosthetic implant
17. Foreign travel to areas of enteric disease prevalence within three months
18. Malignancy
19. Mental health disorder (requiring therapy)
20. Chronic pain syndromes (e.g. fibromyalgia)
21. Recent transfusion, transplant or skin graft
22. Current/previous use of injected drugs or intranasal cocaine
23. High risk sexual behaviour (sexual contact with anyone with HIV / HTLV / AIDS or hepatitis B /C, men who have sex with men (MSM))
24. Known exposure to HIV/hepatitis B/C
25. Tattooing, piercing, cosmetic botulinum (Botox) or permanent makeup within 120 days
26. Risk factors for variant Creutzfeldt-Jakob disease e.g blood transfusion or transplant after 1st January 1980

27. Neurologic, neuro-developmental or neurodegenerative disorders
28. Use of antibiotics for any indication within the past three months

Date of first enrolment
01/11/2018

Date of final enrolment
01/05/2019

Locations

Countries of recruitment
United Kingdom

Wales

Study participating centre
Joint Clinical Research Facility
Institute of Life Sciences 2
Swansea University
Singleton Park
Swansea
United Kingdom
SA2 8PP

Sponsor information

Organisation
Abertawe Bro Morgannwg University Health Board

ROR
https://ror.org/04zet5t12

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Abertawe Bro Morgannwg University Health Board

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			26/07/2023	No	No