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Effects of short-term energy restriction on liver lipids

Submission date	Recruitment status	[_] Prospectively registered
17/05/2012	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
17/05/2012	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
12/07/2018	Surgery	

Plain English summary of protocol

Background and study aims:
Did you know that when people put on excess weight there is an increased danger of unseen liver injury? Fatty liver is up to five times more likely to occur in obese people than those who are a healthy weight. Fatty liver disease can exist without any symptoms, but it can also progress to serious liver damage. It has a range of disease states from non-threatening fat build-up (steatosis), to inflammatory steatohepatitis and fibrosis (cirrhosis). We know weight loss helps to reduce fatty liver, so disease progression can be reversed at this stage. However, once the disease reaches the fibrosis stage the liver damage is irreversible. Progression of the disease is thought to be affected by the body's resistance to its own insulin, coping strategies for excess fat, and automatic immune defences causing inflammation. These interactions are complex and we are not exactly sure what happens. We are investigating these interactions, to see what happens when an obese person follows a short-term very strict diet.

Who can participate?
Patients accepted for weight-loss surgery at Derby Hospitals NHS Foundation Trust.

What does the study involve?
Participants will follow a two-week diet of around 800 kcal/day either the standard hospital pre-operative diet or a meal replacement plan. Before the diet blood tests will be taken, as well as body weight. During the diet a food and drink diary will be completed. After the diet (at the time of the weight-loss surgery) - body weight will be measured, a further blood sample will be taken and biopsies of liver and fat

What are the possible benefits and risks of participating?
Overall, the study should help to identify the effects of the short-term diet on the liver, and wider effects on the body. It should also identify which type of diet is of most benefit to patients undergoing weight-loss surgery. As the participants follow the standard care pathway there are minimal additional risks. However, taking biopsies is an extra procedure and the surgeon will minimise any discomfort and manage any risks involved in this process.

Where is the study run from?
From the University of Nottingham with the co-operation of the regional Bariatric Surgical Service at Derby Hospitals NHS Foundation Trust.

When is the study starting and how long is it expected to run for?
Study recruitment started in May 2012 and will continue until June 2014, or until we have reached the target number of 100 participants, if sooner.

Who is funding the study?
Schools of Biomedical Sciences and Graduate Entry Medicine and Health, University of Nottingham.
Biotechnology and Biological Sciences Research Council (BBSRC).

Who is the main contact?
Prof. Ian Macdonald
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Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
11770

Study information

Scientific Title

Effects of short-term energy restriction on liver lipid content, metabolism and inflammatory status in severely obese adults

Acronym
EnR-Lin

Study objectives
A two week period of energy restriction will effect a reduction in liver lipid content, gene expression and plasma inflammatory markers, in severely obese individuals, relative to the level of energy restriction achieved.

Ethics approval required
Old ethics approval format

Ethics approval(s)
West Midlands - Coventry and Warwickshire, Health Research Authority, 25/01/2012, ref: 12/WM/0017

Study design
Randomised interventional trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

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
Hepatology, Surgery

Interventions
Participants will be assigned randomly, to one of two intervention groups to undertake an energy restrictive diet for two weeks pre-operatively:
1. The Derby Hospitals standard pre-bariatric surgical diet
2. Meal replacement diet using nutritional supplements
Both diets will offer approximately 800kcal/d. No follow-up post-diet, participants reverted to the standard clinical care pathway.

Intervention Type
Procedure/Surgery

Phase
Not Applicable

Primary outcome measure
Fatty Liver Assessment is measured using histological assessment of tissue biopsy and NASH Clinical Research Network scoring system definitions at time of surgery (post-diet).

Secondary outcome measures
1. Body Weight Change is measured using a Marsden MPMS-300 high capacity weighing scale, before the diet, at the pre-op clinic, and after the diet, on the day of surgery
2. Diet Compliance is measured using a study-specific self-reported questionnaire with visual analogue scale on the day of surgery (post-diet)

Overall study start date
01/10/2011

Completion date
30/09/2014

Eligibility

Key inclusion criteria
1. Patients accepted for weight loss surgery at Derby Hospitals NHS Foundation Trust
2. Male and female participants
3. Lower age limit = 18 years, no upper age limit

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
UK Sample Size: 100

Key exclusion criteria
1. Secondary NAFLD
2. Diabetes mellitus treated by insulin, GLP1 or pioglitazone
3. Excess alcohol intake (exceeding national recommendations)
4. Patients receiving anti-inflammatory medication
5. Pregnancy and lactation
6. Any other condition judged by the investigative team to be clinically significant
Exclusions recommended by LighterLife (meal replacement plan):
7.1. Some cardiac conditions (including heart failure, arrhythmias, valve disease, requiring

treatment)
7.2. Some cerebrovascular conditions. (Patients who have suffered cerebrovascular disease may participate if the following conditions are met; more than six months has passed and the patient s condition is stable)
7.3. Schizophrenia, delusional and bipolar disorder, psychosis
7.4. Epilepsy or history of seizure
7.5. Kidney or liver disease (severe)
7.6. Total lactose intolerance
7.7. Type 1 diabetes
7.8. Anorexia or bulimia or other eating disorder undergoing or awaiting treatment.
7.9. Porphyria
7.10. Taking prescribed anticoagulants, digoxin, lithium or monoamine oxidase inhibitors (MAOIs)
7.11. Unstable angina
7.12. Major depressive disorder

Date of first enrolment
08/05/2012

Date of final enrolment
30/06/2014

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Royal Derby Hospital
Uttoxeter Road
Derby
United Kingdom
DE22 3NE

Sponsor information

Organisation
University of Nottingham (UK)

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Sponsor type
University/education

Website
http://www.nottingham.ac.uk/

ROR
https://ror.org/01ee9ar58

Funder(s)

Funder type
Research council

Funder Name
Biotechnology and Biological Sciences Research Council (UK)

Alternative Name(s)
UKRI - Biotechnology And Biological Sciences Research Council, BBSRC UK, BBSRC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Publication and dissemination plan
Planned publication in a peer reviewed journal.

Intention to publish date
31/12/2017

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed 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?
Participant information sheet	version V1.2	08/06/2012	09/01/2017	No	Yes
Results article	results	01/08/2017		Yes	No