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Influence of genetic variants in weight-control after bariatric surgery

Submission date
21/05/2019

Recruitment status
No longer recruiting

Registration date
10/06/2019

Overall study status
Completed

Last Edited
17/07/2023

Condition category
Nutritional, Metabolic, Endocrine

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

Plain English summary of protocol

Background and study aims
The biological information is carried in molecules called DNA, which is inherited from the parents. There are specific sections on the DNA molecules called genes. Humans have around 20,000 genes that influence a wide array of biological traits and functions in the body. Some of these genes and variants can predispose to some diseases and health issues. In this study we are going to compare the differences in the presence of obesity between groups of people with different variants of genes implicated in different mechanisms related to metabolic processes. Then, a subsample of the subjects who have obesity and who are candidates to bariatric surgery are studied.

Who can participate?
There are included men and women with ages between 18 and 65 years and values of Body Mass Index (BMI) of > 35 kg/m², from the Hospital Clínico San Carlos, located in Madrid.

What does the study involve?
Clinical variables are collected before and after surgery, including body weight and the presence of comorbidities of obesity such as diabetes, dyslipidemia or hypertension. There is no intervention during the follow up of the procedure, only observational collection of the clinical variables and the study of the association of the different variants of genes distributed among patients with them.
The final objective of the study is to detect possible variants of genes that determine a better weight evolution with greater loss and maintenance over time, and a greater remission of pre-surgery comorbidities.

What are the possible benefits and risks of participating?
The benefits of the analysis is that it allows an individualized analysis on variants of genes related to obesity, so it provides more information about the disease and the weight evolution after bariatric surgery. There are no risks for participation in the study, since this only involves a blood draw, like any other normal analytical procedure. In the cases, being patients undergoing bariatric surgery, the collection of the weight variable is collected within the usual medical monitoring.

Where is the study run from?
Hospital Clínico San Carlos, Madrid, Spain.

When is the study starting and how long is it expected to run for?
April 2009 to December 2015

Who is funding the study?
Fundación Mutua Madrileña, Spain

Who is the main contact?
1. Dr Miguel Angel Rubio Herrera (scientific),
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Additional identifiers

Protocol serial number
Lab-E2/2009

Study information

Scientific Title
Influence of brain-gut axis GENe variants in the response to BARiatric surgery

Acronym
GENBAR

Study objectives
Aims:
1. Identify genetic markers of response to bariatric surgery
2. To analyze whether variants or groups of variants (haplotypes) of the genes that code for gastrointestinal hormones, their receptors or proteins which intervene in their specific tissue expression, have influence in:
- the weight response and weight loss maintenance in the evolution
- the presence of comorbidities

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 16/02/2009, St Carlos Hospital Ethics Committee (Comité de Ética de la Investigación con Medicamentos (CEIm), Servicio Farmacología Clínica 4ª planta, Ala Norte (Puerta G), Hospital Clínico San Carlos C/Profesor Martín Lagos, s/n 28040 Madrid, Spain; ceic.hcsc@salud.madrid.org; 913303819)

Primary study design
Observational

Study design
Observational longitudinal case-control study

Study type(s)
Other

Health condition(s) or problem(s) studied
Obesity

Interventions
This study includes bariatric surgery candidates with different degrees of intestinal malabsorption (gastric bypass, biliopancreatic derivation) or restriction (sleeve gastrectomy), according to the clinical pathway protocol used at our hospital.
Biological samples are extracted prior to surgery and these are analyzed for a battery of gene polymorphisms.
Participant weight and comorbidities information will be collected prospectively.

The data of the clinical variables are obtained from the medical records in paper and digital format, in the hospital's own databases. Genetic determinations are performed on samples extracted prior to bariatric surgery, in the Endocrinology Laboratory of the hospital.

The case-control study is done simultaneously, to see if the gene determinants objects of study are associated with obesity in our sample of cases in comparison to a control population. Then, the cases are followed-up after bariatric surgery for 9 years, to study the weight response and the association with gene determinants. The gene determinants included in the study have been described in the literature associated to obesity prevalence. The samples of controls are healthy subjects without obesity prevalence or background, from the same environment, race, and same age range and gender distribution than the cases.

Intervention Type
Procedure/Surgery

Primary outcome(s)
Variation in weight response after bariatric surgery and the correlation with genetic variation.
1. Gene determinations (SNPS polymorphisms) measured using extraction of DNA from peripheral blood samples prior to surgery. The evaluation of the selected SNPs is analysed by allelic discrimination using Taqman® probes.
2. Weight, measured with calibrated electronic scale at 6 months, 1 year, 2 years, 3 years, 4 years, 5 years, 6 years, 7 years, 8 years, 9 years; Total weight loss percentage (TWLP), calculated by formula; excess weight loss percentage (EWLP), calculated by formula. Ideal weight calculated for BMI 25 kg/m2.

Key secondary outcome(s)
Evolution of comorbidities after bariatric surgery and the correlation with genetic variation.
1. At the time of surgery: age, gender, ethnia, type of surgery, date of surgery, weight, height, BMI, presence of comorbidities (hypertension, diabetes, dyslipidemia, NAFLD, obstructive sleep apnoea syndrome).
2. Remission of comorbidities (hypertension, diabetes, dyslipidemia, NAFLD, obstructive sleep apnoea syndrome).

Completion date
30/09/2018

Eligibility

Key inclusion criteria
Cases:
1. Men and women with ages between 18-65 years
2. BMI ≥ 40 kg/m² (men) or ≥ 35 kg/m² (women) with at least one major comorbidities (type 2 diabetes, hypertension, hyperlipemia, sleep obstructive apnea)
3. Absence of serious disease (chronic kidney disease, liver disease, neurological disease)
4. Absence of psychiatric pathology
5. Ability to understand the mechanisms involved in the surgery that will be proposed
6. Written informed consent to participate in the study

Controls:
1. Men and women with ages between 18-65 years

2. BMI between 18.5-24.9 kg/m²
3. Absence of comorbidities
4. Absence of serious disease (chronic kidney disease, liver disease, neurological disease)
5. Absence of psychiatric pathology
6. Written informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Upper age limit
65 Years

Sex
All

Total final enrolment
510

Key exclusion criteria
1. Systematic disease not associated with obesity (inflammatory bowel disease, inflammatory rheumatic disease…)
2. Hepatitis C, known cirrhosis (or discovered during the study)
3. HIV
4. Drug and/or alcohol abuse
5. Eating disorders
6. Pregnancy or breastfeeding
7. Psychiatric disorders

Date of first enrolment
01/04/2009

Date of final enrolment
31/12/2015

Locations

Countries of recruitment
Spain

Study participating centre

Hospital Clínico San Carlos
Profesor Martín Lagos, s/n.
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Sponsor information

Organisation
Instituto de Investigación Sanitaria del Hospital Clínico San Carlos.

ROR
https://ror.org/014v12a39

Funder(s)

Funder type
Charity

Funder Name
Fundación Mutua Madrileña

Alternative Name(s)
Mutua Madrileña Foundation

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
Spain

Results and Publications

Individual participant data (IPD) sharing plan
The current data sharing plans for this study are unknown and will be available at a later date

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	Association between pre-operative factors and weight regain	19/06/2021	16/08/2022	Yes	No
Results article	Association between CLOCK gene variants and weight response	24/08/2022	12/09/2022	Yes	No
Results article	Combined effect of genetic variants on weight response	26/06/2023	17/07/2023	Yes	No