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The effect of metformin and myoinositol in women with polycystic ovary syndrome: role of body mass and adiponectin

Submission date
04/04/2021

Recruitment status
No longer recruiting

Registration date
14/04/2021

Overall study status
Completed

Last Edited
20/10/2021

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
Polycystic ovary syndrome (PCOS) is a common condition that affects how a woman's ovaries work. The 3 main features of PCOS are:
1. Irregular periods – which means your ovaries do not regularly release eggs (ovulation)
2. Excess androgen – high levels of "male" hormones in your body, which may cause physical signs such as excess facial or body hair
3. Polycystic ovaries – your ovaries become enlarged and contain many fluid-filled sacs (follicles) that surround the eggs (but despite the name, you do not actually have cysts if you have PCOS)
The aim of this study is to compare the effects of six months of treatment of two insulin-lowering therapies on the clinical and endocrine-metabolic parameters in women affected by polycystic ovary syndrome. The study group includes 66 patients, randomly allocated to subgroup A (metformin 1500 mg/day) and subgroup B (myo-inositol 4000 mg/day). The investigations include body composition indices and hirsutism score evaluation, hormonal assays, oral glucose tolerance test, adiponectine and lipid profile at baseline and after six months of treatment.

Who can participate?
Adult females aged between 18 and 40 who have PCOS diagnosis

What does the study involve?
Initially, potential participants will be invited for a screening test where the researchers will measure their weight, height, waist, and hips and explain the study in detail to them. After successful screening, if they are still interested in taking part, they will come into University Clinical Centre Banja Luka, in the morning, having fasted overnight (for 12 hours). The researchers will take several blood samples from this throughout the day 30 ml of blood will be taken at six times throughout the 2 hours; a total of 180 ml of blood. A bed will be provided to rest on.

What are the possible benefits and risks of participating?
There are no notable benefits for those involved in the study. They will get the opportunity to

learn about research in this area. Furthermore, their participation in this project may help to contribute to a better understanding of the effects of insulin sensitizers on changes in adipose tissue. This information may ultimately be important in the long-term to help to develop more effective strategies to treat PCOS and prevent diabetes and cardiovascular disease in later age. Whilst there are no risks, some people may find it uncomfortable to give blood samples. They can be assured that the researchers are experienced and will ensure they are comfortable with all procedures and assessments. Women who become pregnant over the course of the study must inform the investigator and leave the study immediately. Drugs used in the study have been already registered by State Agency for drugs and have been part of standard treatments of PCOS. If at any stage they have an adverse reaction, they should stop taking the drug and immediately inform the researcher who will instruct them on what to do.

Where is the study run from?
University Clinical Centre of Republic of Srpska (Bosnia and Herzegovina)

When is the study starting and how long is t expected to run for?
November 2017 to May 2019

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
Dr Valentina Soldat-Stankovic
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Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title

The effect of metformin and myoinositol on metabolic outcomes in women with polycystic ovary syndrome: role of body mass and adiponectin in a randomized controlled trial

Study objectives
Six months therapy with different insulin sensitive compounds can influence changes in body mass and adiponectin in PCOS women

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 06/10/2016, University Clinical Centre of Republic of Srpska Ethics Committee (Office of Research Ethics, University Clinical Centre of Republic of Srpska Banja Luka, 12 beba bb, Bosnia and Herzegovina; +387 51 310 530; info@kc-bl.com), ref: 01-9-742.2/16

Primary study design
Interventional

Study design
Single centre randomized open-label clinical trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Polycystic ovary syndrome

Interventions
The study group includes 66 patients (33 lean and 33 overweight/obese) with PCOS, Participants will be randomly allocated into treatment groups in a 1:1 ratio using stratification by body mass index (≤25 kg/m² or >25 kg/m²). All 33 patients from each study group will receive either 2g myoinositol (MI) plus 200 mcg folic acid twice daily or metformin (MET) 500 mg thrice daily for 6 months, respectively.
After the successful screening, if they are still interested in taking part, they will come into the Endocrinology Clinic, in the morning, having fasted overnight (for 9 hours). In all subjects, Body mass index, waist circumference and hirsutism score will be determined at the first visit and at the 6-month endpoint. Body composition will be estimated by using bioelectrical impedance analysis. Upon enrollment, all patients will also undergo transvaginal ultrasonography. Baseline blood samples will be collected after 12 hours of fasting during the early follicular phase for hormonal assessment, insulin and glucose during 120 min OGTT test, adiponectin, lipid profile and hsCRP.
At the end of a six-month investigation period, clinical and biochemical evaluation was repeated.

Intervention Type
Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)

myoinositol, folic acid, metformin

Primary outcome(s)
1. Adiponectin measured using blood test at baseline and six months (after 12 hours of fasting)

Key secondary outcome(s)
1. Body mass index (kg/m²) and body composition changes measured by bioelectrical impedance at baseline and six months
2. Testosterone level measured using blood test at baseline and six months (after 12 hours of fasting)
3. Glyco-insulinemic metabolism measured using area under the curve insulin post oral glucose tolerance test (AUC insulin), area under the curve glucose post oral glucose tolerance test (AUC glucose), quantitative insulin sensitivity check index QUICKI and homeostasis model assessment index HOMA IR at baseline and six months (after 12 hours of fasting)
4. Improvement/deterioration of clinical symptoms: hyperandrogenic features measured by Ferriman Gallwey score at baseline and six months

Completion date
05/05/2019

Eligibility

Key inclusion criteria
1. Polycystic Ovary Syndrome, diagnosed in accordance with Rotterdam Consensus Conference Criteria 2003
2. Age 18 - 40 years

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
Female

Total final enrolment
66

Key exclusion criteria
1. Significant liver or renal impairment
2. Other hormonal dysfunction (hypothalamic, pituitary, thyroidal or adrenal causes for the clinical signs)
3. History of drug and alcohol abuse

4. History of breast and uterine cancer
5. Diagnosis of diabetes mellitus
6. Use of drugs able to interfere with gluco-insulinaemic metabolism for at least three months prior to entering the study

Date of first enrolment
09/11/2017

Date of final enrolment
20/11/2018

Locations

Countries of recruitment
Bosnia and Herzegovina

Study participating centre
University Clinical Centre of Republic of Srpska
12 beba bb
Banja Luka
Bosnia and Herzegovina
78000

Sponsor information

Organisation
University clinical center of Republika Srpska

ROR
https://ror.org/05vapw332

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.
Upon request, the corresponding author will provide access to individual de-identified participant data, Study protocol, Informed consent form. Data may be requested from corresponding author beginning 3 months and ending 5 years following article publication. All data generated or analysed during this study will be included in the subsequent results publication

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		19/10/2021	20/10/2021	Yes	No
Participant information sheet			04/05/2021	No	Yes