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Comparison of two therapies for hyperandrogenism in girls

Submission date	Recruitment status	[_] Prospectively registered
15/01/2010	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
06/04/2010	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
08/07/2013	Nutritional, Metabolic, Endocrine	

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

Contact name
Prof Lourdes Ibáñez

Contact details
Hospital Sant Joan de Déu, University of Barcelona
Esplugues, Barcelona
Spain
08950

Additional identifiers

Protocol serial number
PI09/90444

Study information

Scientific Title
Ethynil-estradiol cyproterone acetate versus low-dose metformin-flutamide-pioglitazone in girls with hyperinsulinemic androgen excess: effects on parameters of chronic inflammation, and on risk factors for type 2 diabetes and cardiovascular disease

Acronym
DIO

Study objectives
Low-dose metformin-flutamide-pioglitazone will prove to be superior to ethynil-estradiol-cyproterone acetate in improving chronic inflammation and risk factors for type 2 diabetes and cardiovascular disease

Please note that as of 08/02/2011 the study has been updated. The study design of this trial has changed from a "Randomised 2 arm double blind active controlled parallel group trial" to a "Randomised 2 arm open-labeled active controlled parallel group trial".

Ethics approval required
Old ethics approval format

Ethics approval(s)
CEIC Fundacio Sant Joan de Déu approved on the 7th of October 2009

Study design
Randomised 2 arm open-labeled active controlled parallel group trial

Primary study design
Interventional

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Hyperinsulinemic ovarian androgen excess

Interventions
Current interventions as of 08/02/2011:
Adolescents with androgen excess will be allocated to treatment with metformin-flutamide-pioglitazone or ethynil-estradiol-cyproterone acetate over 18 months.

Auxology, blood counts, liver and renal functions, endocrine-metabolic parameters (fasting blood) and body composition will be measured at 0 and 18 mo and at 6 mo after treatment stop

Previous interventions:
Adolescents with androgen excess will be allocated to treatment with metformin-flutamide-pioglitazone or ethynil-estradiol-cyproterone acetate over 12 months.

Auxology, blood counts, liver and renal functions, endocrine-metabolic parameters (fasting blood) and body composition will be measured at 0 and 12 mo and at 6 mo after treatment stop.

Intervention Type
Drug

Phase
Not Specified

Drug/device/biological/vaccine name(s)
Ethynil-estradiol cyproterone acetate, metformin-flutamide-pioglitazone

Primary outcome(s)
1. Insulin sensitivity measured by Homeostasis Model Assessment (HOMA)
2. Insulin
3. Abdominal fat measured by Dual Energy X-Ray Absorptiometry (DXA)
4. Abdominal visceral fat and intrahepatic lipid content
5. Intermuscular Adipose Tissue (IMAT) measured by Magnetic Resonance (MR)
6. Carotid intima media thickness (IMT) measured by Doppler sonography

Key secondary outcome(s))
1. Hirsutism measured by Ferriman & Gallwey score
2. Androgens
3. Triglycerides
4. Ultrasensitive C-reactive protein
5. Neutrophile/lymphocyte ratio
6. High molecular weight adiponectin
7. Changes in the size, number, and distribution of adipocytes determined by subcutaneous adipose tissue biopsy

Completion date
05/11/2011

Eligibility

Key inclusion criteria
1. Adolescent girls (14-17 yr)
2. Two or more yr beyond menarche
3. BMI less than the 97th centile for age
4. Clinical and biochemical signs of androgen excess (hirsutism [Ferriman & Gallwey score >8] and /or acne and/or menstrual irregularities)
5. Total testosterone >60 ng/dL and/or free androgen index >5
6. Hyperinsulinism: fasting insulin >15 uU/mL; glucose/insulin ratio <7, or peak insulin after an OGTT >100 uU/mL

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Lower age limit
14 years

Upper age limit
17 years

Sex
Female

Key exclusion criteria
1. Pregnancy or pregnancy risk
2. Late-onset congenital adrenal hyperplasia due to 21-OH deficiency
3. Hyperprolactinemia
4. Cushing's syndrome
5. Hypothyroidism
6. Abnormal liver or kidney function, Creatine Phosphokinase (CPK) or Lactate Dehydrogenase (LDH)
6. Diabetes or impaired glucose tolerance
7. Cutaneous allergies
8. Treatment with anti-androgens, estroprogestagens, or medications interfering with lipid and carbohydrate metabolism during the previous 6 mo
9. Bacterial infections
10. Inflammatory intestinal conditions

Date of first enrolment
01/02/2010

Date of final enrolment
05/11/2011

Locations

Countries of recruitment
Spain

Study participating centre
Hospital Sant Joan de Déu, University of Barcelona
Esplugues, Barcelona
Spain
08950

Sponsor information

Organisation
Hospital Sant Joan de Déu (Spain)

ROR
https://ror.org/001jx2139

Funder(s)

Funder type

Hospital/treatment centre

Funder Name
Instituto de Salud Carlos III (Spain) (ref: PI09/90444)

Results and Publications

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?
Results article	results	01/11/2011		Yes	No
Results article	results	01/10/2012		Yes	No
Results article	results	01/05/2013		Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes