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Palmitoylethanolamide intake and systemic endothelial function in ocular hypertensive patients

Submission date
05/09/2011

Recruitment status
No longer recruiting

Registration date
19/09/2011

Overall study status
Completed

Last Edited
21/04/2017

Condition category
Eye Diseases

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

Plain English summary of protocol

Background and study aims
Glaucoma is an eye condition where the optic nerve, which connects the eye to the brain, becomes damaged, leading to loss of vision if not detected and treated early on. It is caused by several different factors, the most important is increased pressure in the eye (ocular hypertension), but endothelial dysfunction, where the endothelium (inner lining) of blood vessels fails to function normally, may prevent the proper distribution of blood in the eye, contributing to the damage. Changing endothelial function may help to improve the blood supply to the optic nerve and prevent patients with ocular hypertension from developing glaucoma. Palmitoylethanolamide (PEA) is a substance that is involved in the eye tissues and blood vessels so could play a role in the treatment of ocular hypertension and glaucoma patients. The aim of this study is to assess the action of PEA on the blood vessels of ocular hypertensive patients.

Who can participate?
Patients aged under 65 with ocular hypertension, and healthy volunteers

What does the study involve?
Participants are asked to give a small sample of blood and their height, weight and blood pressure are measured. They undergo an eye examination including an eye pressure test, optic nerve assessment, and a blood vessel assessment. Participants are randomly allocated to take either PEA or a matching placebo (dummy) tablet twice a day for a period of 90 days under medical supervision to monitor possible side effects. There is then a 2-month break, after which each participant switches to the other treatment for a further 3 months. All participants' blood vessels are assessed before and after each treatment period and are compared with the blood vessels of the healthy volunteers.

What are the possible benefits and risks of participating?
PEA may improve blood vessel function in ocular hypertensive patients

Where is the study run from?
University of Bologna (Italy)

When is the study starting and how long is it expected to run for?
September 2010 to July 2011

Who is funding the study?
University of Bologna (Italy)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
C/2009/U/DISP

Study information

Scientific Title
Palmitoylethanolamide intake and systemic endothelial function in ocular hypertensive patients: a single centre, randomized double blind, placebo controlled cross-over study

Study objectives
Glaucoma is a multi-factorial optic neuropathy of unknown aetiology in which the increased intraocular pressure is the most important risk factor, but also ischaemia, vascular dysregulation, vasospasm and endothelial dysfunction, may prevent the physiological regulation of ocular blood flow, determining modifications in the optic nerve head supply, contributing to the damage of the ganglion cells.

Therapeutically, therefore, both reducing intra ocular pressure (IOP) and improving ocular blood flow may be considered as treatment options both in glaucoma and ocular hypertension. Its feasible that ameliorating endothelial function may contribute to improve optic nerve head

blood supply and to reducing susceptibility of Orthotopic heart transplantation (OHT) patients to develop glaucoma or of glaucoma patients to progress more rapidly.

Palmitoylethanolamide belongs to the endocannabinoid system and it is implicated in the physiology of different human systems, included ocular tissues and vascular system where seems to exert, among others, an important role in the endothelial protection in the rat so it could play a main role in the treatment of glaucoma or OHT patients.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Local Ethics Committee of the S. Orsola-Malpighi Hospital, Bologna, 05/09/2010, ref: C/2009/U /DISP

Study design
Single centre randomized double blind placebo controlled cross-over study

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Ocular hypertension

Interventions
Treatment arms: 20 OHT patients randomly assigned to assume a 300 mg oral tablet of palmitoylethanolamide (PEA) two time a day for three months and after two months of wash out switched to treatment with placebo. The others 20 OHT patients randomly assigned to assume placebo and after two months of wash out switched to treatment with palmitoylethanolamide (PEA).

All patients underwent:
1. Ophthalmologic examination including visual acuity and applanation IOP assessment
2. Corneal thickness evaluation with a Tomey SP3000 pachymeter (Tomey Corp., Nagoya, Japan)
4. Biomicroscopy of the anterior and posterior segment with automatic measurement of the C/D area ratio of the optic nerve head with Stratus OCT3 (Zeiss-Humphrey, Dublin, CA).
5. Standard achromatic perimetry (SAP) with a Humphrey Field Analyzer-SITA program (Zeiss-Humphrey, San Leandro, CA)
6. Blood sampling to assess lipid profile and fasting serum glucose.
7. Body mass index calculation
8. Systolic and diastolic blood pressure measurement
9. Assessment of the flow-mediated vasodilatation (FMD) with a Philips ENVISOR echographic machine (Philips Medical Systems, Best, The Netherlands); FMD was calculated as the percentage change in brachial artery diameter in response to reactive hyperemia:
FMD = [(VDHyperemia VDBaseline)/ VDBaseline] x 100%
VD= Vessel Diameter

Intervention Type

Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Palmitoylethanolamide

Primary outcome(s)
1. FMD values in OHT patients compared with controls at baseline
2. FMD values in OHT patients randomly assigned to assume Palmitoylethanolamide or placebo for 3 months
3. FMD values in OHT patients after 2 month washout period
4. FMD values in OHT patients after they switched to the other treatment for further 3 months

Key secondary outcome(s))
Effect of palmitoylethanolamide vs placebo on the endothelial function of OHT patients at baseline, after treatment and wash-out

Completion date
10/07/2011

Eligibility

Key inclusion criteria
1. 40 patients aged < 65 years (mean 56.8±8.1)
2. Baseline IOP >= 22 mm/Hg, on at least two measurements (mean 23.11±0.93)
3. Open anterior chamber angle at gonioscopy, cup/disc ratio < 0.4
4. Normal visual field (VF) (MD <3 dB and PSD < 2.5 dB) and corneal central thickness within normal values
5. 40 healthy control subjects aged matched (mean 56.2±10.4)

Participant type(s)
Mixed

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Key exclusion criteria
1. Cardiovascular disease
2. Diabetes, hypertension, hypercholesterolemia
3. Vasoactive medications

Date of first enrolment

28/09/2010

Date of final enrolment
10/07/2011

Locations

Countries of recruitment
Italy

Study participating centre
Via Palagi 9
Bologna
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Sponsor information

Organisation
University of Bologna (Italy)

ROR
https://ror.org/01111rn36

Funder(s)

Funder type
University/education

Funder Name
Università di Bologna

Alternative Name(s)
University of Bologna, UNIBO

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location

Italy

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	01/02/2013		Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes