Light on glaucoma: the influence of light intensity on perimetry tests and the de Vries-Rose, Weber's and Ferry-Porter's law.

Published: 28-10-2014
Last updated: 22-04-2024

The objective of this study is to determine the optimal background light intensity for the examination of the visual field with a perimetry test and to confirm the de Vries-Rose, Weber's and Ferry-Porters law in patients with glaucoma.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Glaucoma and ocular hypertension
Study type	Observational non invasive

Summary

ID

NL-OMON41039

Source
ToetsingOnline

Brief title
Light on glaucoma

Condition

- Glaucoma and ocular hypertension

Synonym
glaucoma, POAG

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen

Source(s) of monetary or material Support: Ministerie van OC&W,glaucoom fonds

Intervention

Keyword: Contrast sensitivity, Critical flicker frequency, Glaucoma, Light intensity

Outcome measures

Primary outcome

Measurement of (1) the visual field, (2) contrast sensitivity and (3) the critical flicker frequency in different light intensities.

(1) The visual field is determined by offering points in different places of the visual field, which increase in light intensity. By repeating the test with grey filters, the influence of the background light on the outcome of the visual field test can be determined.

(2) The contrast sensitivity is measured with a set spatial frequency. By repeating the test with grey filters, the influence of the background light on the contrast sensitivity can be determined. This results in a function (contrast sensitivity as a function of light intensity) from which the de Vries-Rose and Weber's law can be confirmed.

(3) For the measurement of the critical flicker frequency, the frequency where the flickering light becomes a continue signal is determined. By repeating the test with grey filters, the influence of the background light on the critical flicker frequency can be determined. This results in a function (critical flicker frequency as a function of light intensity) from which Ferry-Porter's

law can be confirmed.

Secondary outcome

N/A

Study description

Background summary

Many patients with glaucoma experience difficulties when going from light to dark and vice versa. These difficulties are not only present in patients with severe glaucoma, but also in patients with a normal visus and an intact visual field.

The standard perimetry test which is used to diagnose glaucoma has a set background light intensity. It has never been researched if this intensity gives optimal results for the the examination of the visual field in patients with glaucoma.

When healthy persons see in different light intensities, several psychophysical laws are applicable [Van Hateren 1992]. These concern the de Vries-Rose and Weber's law (contrast sensitivity in different light intensities) and Ferry-Porter's law (critical flicker frequency in different light intensities). It is yet unclear whether these laws are still applicable in patienst with glaucoma.

Study objective

The objective of this study is to determine the optimal background light intensity for the examination of the visual field with a perimetry test and to confirm the de Vries-Rose, Weber's and Ferry-Porters law in patients with glaucoma.

Study design

Case-control study.

Study burden and risks

A single visit, in which several psychophysical tests are performed and a few extra tests to check the healthy state of the eye. Total time invested is 1.5 to 2 hours. In health subjects, it is possible that an eye disease is

discovered during the course of this study. The resulting psychological stress to the subject can be a disadvantage. However, the advantage is an early start of adequate treatment. All measurements are conducted using optical techniques that do not touch the eye and therefore are completely harmless and so there is no risk during the experiments. No mydriasis (pupil dilation) will be implemented.

Contacts

Public
Universitair Medisch Centrum Groningen

Hanzeplein 1
Groningen 9713 GZ
NL
Scientific
Universitair Medisch Centrum Groningen

Hanzeplein 1
Groningen 9713 GZ
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Glaucoma patients aged 18 years or older who visit the ophthalmology outpatient department of the UMCG, provide written informed consent form and meet the inclusion-exclusion criteria.;Healthy subjects will consist of people who have signed in, without ophthalmic abnormalities and provide written informed consent.

Exclusion criteria

Glaucoma patients:
- Visual acuity below 0.8 (above 50 years) or below 1.0 (below 50 years of age)
- Any other eye disease than glaucoma;Healthy subjects:
- Visual acuity below 0.8 (above 50 years) or below 1.0 (below 50 years of age)
- Any other eye disease

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	16-01-2015
Enrollment:	60
Type:	Actual

Ethics review

Approved WMO

Date:	28-10-2014
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL50290.042.14