Using eye tracking to simplify screening for visual field defects

Published: 12-07-2018
Last updated: 12-04-2024

Determine the extent to which we can screen for and reconstruct visual field defects based on an analysis of eye movement behaviour.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Vision disorders
Study type	Observational non invasive

Summary

ID

NL-OMON46571

Source
ToetsingOnline

Brief title
Using eye tracking in screening for visual field defects

Condition

- Vision disorders

Synonym
field of vision, visual field

Research involving
Human

Sponsors and support

Primary sponsor: Oogheelkunde
Source(s) of monetary or material Support: Ministerie van OC&W,European Committee

Intervention

Keyword: Eye tracking, Screening, Visual field defects

Outcome measures

Primary outcome

Eye movement characteristics and changes therein over time in patients and control participants.

Secondary outcome

Viewing priority maps, calculated based on eye-movement data according to Marsman et al. (2016). Correlations between viewing priority maps and VF maps obtained using SAP. Latency and accuracy measures based on ETT, correlations between these measures and VF maps (mean deviations) obtained using SAP.

Classification accuracy of the machine learning classifier.

Study description

Background summary

There are several (neurodegenerative) conditions, which lead to visual field defects (VFD). One example is Hemianopia, where one half of the visual field (left or right of the vertical midline) is missing due to damage in the contralateral visual cortex. Another common cause for visual field deficits is glaucoma, which is characterized by damage at the optic nerve head. The currently most widely used method to assess visual field defects is automated perimetry. This method, however, can be hard to use in various patient groups, as it requires the patient to focus on a hard task for a long time. Using eye-movements may help simplify this type of assessment.
We will investigate the usage of eye movement recordings to assess visual field defects.
More precisely, we will test and improve two alternative methods for screening for VFD based on measuring eye-movements. The tests will be simpler, shorter, more enjoyable, and less fatiguing than currently used ones. Therefore, we expect these to facilitate the screening for visual field defects.
We are also going to investigate the retest reliability of our two tests. We will invite our participants a second time after several weeks to do the tests again.

Study objective

Determine the extent to which we can screen for and reconstruct visual field defects based on an analysis of eye movement behaviour.

Study design

Explorative, observational case-control study.

Study burden and risks

All involved tests are non-invasive, and cause no increase in risk.
Participation requires (additional) time to complete screening, questionnaires and the behavioural tasks. Only the healthy participants will undergo a routine ophthalmic screening test to rule out ophthalmic problems such as the presence of a visual field defect. For patients, their ophthalmic eye status is already known. In study 1 and 2 patients and healthy participants will perform a cognitive screening test (the Montreal Cognitive Assessment (MoCA)). If any abnormal screening results are obtained, they will be referred to their GP. Detection of signs of an eye condition or cognitive impairment may come as an unexpected, unpleasant surprise. However, an early diagnosis will allow treatment to be initiated and therefore result in more preservation of visual or cognitive functioning. Taking part in the study will not interfere with ongoing treatment of the patients.

Contacts

Public
Selecteer

Ant. Deusinglaan 2
Groningen 9713 AW
NL
Scientific
Selecteer

Ant. Deusinglaan 2
Groningen 9713 AW
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

Patients: the presence of a visual field defect;

Exclusion criteria

Patients: cognitive impairment (blind MoCA score below 18 out of 22)
Healthy participants: any evidence for an eye disease/visual field loss coming from the screening or questionnaire: intraocular pressure above 21 mmHg, positive family history of glaucoma, questionnaire results that indicate the presence of any ophthalmic abnormality (exceptions are made for prescription glasses or a previous cataract extraction), cognitive impairment (blind version MoCA score below 18 out of 22)

Study design

Design

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

Primary purpose: Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-06-2018

Enrollment:	265
Type:	Actual

Ethics review

Approved WMO Date:	12-07-2018
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	NL65230.042.18
Other	UMCG Register and NTR