

Brain changes as a consequence of blindness in one half of the visual field

Gepubliceerd: 17-02-2016 Laatste bijgewerkt: 15-05-2024

We expect to find adaptive auditory and visual processing (optimised residual and risen compensatory perceptual performance) as a consequence of homonymous hemianopia. Additionally, we hypothesise these changes to be reflected in sustained...

Ethische beoordeling	Niet van toepassing
Status	Werving nog niet gestart
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON21100

Bron

Nationaal Trial Register

Verkorte titel

Neuroplasticity in homonymous hemianopia

Aandoening

Homonymous hemianopia, post chiasmic cardiovascular accident

Homonieme hemianopsia, post-chiasmatische beroerte

Ondersteuning

Primaire sponsor: Prof. dr. N.M. Jansonius

UMCG, Department of Ophthalmology

HPC BB61, Postbus 30.001 9700 RB Groningen

Overige ondersteuning: BCN-BRAIN, University Medical Center Groningen

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

scores on visual and auditory functional tests, cortical activation and functional connectivity during visual and auditory processing, cortical and retinal nerve thickness and white matter tracts of all individual participants.

Toelichting onderzoek

Achtergrond van het onderzoek

Even though there is increasing interest in the reorganisation of the brain after vision loss, systemic investigation of neuroplasticity in patients with homonymous hemianopia (HH), the complete loss of one side of the visual field, is still very rare. Better understanding of this uncharted field has tremendous potential for the development of neuroscientifically-motivated rehabilitation techniques. For that reason and with this project, I want to get insight into whether and how both the visual and the auditory system reorganise after acquiring HH. More specifically, I want to investigate adaptive auditory and visual processing (optimised residual and risen compensatory perceptual performance) of patients with HH and I expect this to be reflected in cortical reorganisation at both a structural and a functional level. For this purpose psychophysical tests will be performed and cortical plasticity will be assessed by (f)MRI using a combination of novel techniques (i.e. population receptive field modelling, connective field mapping and cortical thickness comparisons). In this way, the impact of homonymous visual field defects on perceptual processing can be investigated and, subsequently, the degree of optimised residual and compensatory perceptual behaviour can be correlated with structural and functional cortical plasticity. This provides us with new quantitative knowledge about changes in cortical structure, visual and auditory networks and maps in HH close to the level of neuronal populations – the level that is most critical for understanding the relationship between neural computations, behaviour and perception, which could eventually lead to systematic training tools that will improve the reorganisation.

Doel van het onderzoek

We expect to find adaptive auditory and visual processing (optimised residual and risen compensatory perceptual performance) as a consequence of homonymous hemianopia. Additionally, we hypothesise these changes to be reflected in sustained functional and structural changes on the cortical level. More specifically, we expect a) remapped visual field representations in the visual cortex, b) structural changes in the visual system (i.e. cortical thickness and white matter tracts), c) changes in cortical representations of auditory space, and d) changes in functional connectivity maps.

Onderzoeksopzet

not applicable, no longitudinal design

Onderzoeksproduct en/of interventie

auditory and visual functioning tests
(f)MRI measurements

Contactpersonen

Publiek

NeuroImaging Center, room 124

H.N. Halbertsma
Antonius Deusinglaan 2

Groningen 9713 AW
The Netherlands
+31 (0)50 363 4431

Wetenschappelijk

NeuroImaging Center, room 124

H.N. Halbertsma
Antonius Deusinglaan 2

Groningen 9713 AW
The Netherlands
+31 (0)50 363 4431

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

Participants with hemianopia:

- have signed written consent
- age older than 18

- homonymous hemianopia due to post chiasmic CVA stable ophthalmologic conditions

Controls:

- have signed written consent age older than 18
- subjectively healthy

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

Participants with hemianopia:

- visual neglect
- visual field defect due to condition other than post chiasmic CVA clinical eye conditions
- hearing impairments
- macular sparing

Controls:

- visual impairments
- auditory impairments

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Anders
Blinding:	Open / niet geblindeerd
Controle:	N.v.t. / onbekend

Deelname

Nederland

Status:	Werving nog niet gestart
(Verwachte) startdatum:	01-03-2016
Aantal proefpersonen:	40
Type:	Verwachte startdatum

Ethische beoordeling

Niet van toepassing

Soort: Niet van toepassing

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 47305

Bron: ToetsingOnline

Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL5637
NTR-old	NTR5752
CCMO	NL55973.042.15
OMON	NL-OMON47305

Resultaten

Samenvatting resultaten

not applicable