Functional connectivity of cortico-cortical and subcortico-cortical brain networks in Parkinson*s disease

Published: 10-07-2008
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This project aims to understand the symptomatology PD in the light of functional brain interactions, in the hope of elucidating the role of the frontal striatal system to behaviour.

Ethical review	Approved WMO
Status	Completed
Health condition type	Movement disorders (incl parkinsonism)
Study type	Observational non invasive

Summary

ID

NL-OMON39613

Source
ToetsingOnline

Brief title
Functional connectivity in PD

Condition

- Movement disorders (incl parkinsonism)

Synonym
parkinsonism, Parkinson's Disease

Research involving
Human

Sponsors and support

Primary sponsor: Vrije Universiteit Medisch Centrum
Source(s) of monetary or material Support: Ministerie van OC&W,Parkinson vereniging;Parkinson Fonds

Intervention

Keyword: MEG, mental rigidity, MRI, PD

Outcome measures

Primary outcome

Blood oxygenation level dependent (BOLD) response in dorsal frontal-striatal and cortico-cortical systems in PD patients and controls, compared to their BOLD response as measured during the initial testing session.

Secondary outcome

secundary study parameters:

1) Differences in BOLD responses across differnet cognitive and psychiatric symptom-related subgroups in PD patients.

2) Structural abnormalities in PD versus controls, using:

a) voxel-based morphometry (VBM): measure for regional volumetry

b) diffusion tensor imaging (DTI): measure for structural connectivity

3) Resting state functional connectivity in PD versus controls, focussing on:

a) cortico-cortical connections

b) cortico-subcortical connections

4) Differences in functional and structural measures between the initial and the current testing session

Study description

Background summary

The frontal-striatal system mediates emotional and cognitive processes. Parkinson*s Disease (PD), shows abnormalities of the frontal-striatal system, leading to a dysregulation of cortico-cortical systems and emotional and cognitive symptoms.

Study objective

This project aims to understand the symptomatology PD in the light of functional brain interactions, in the hope of elucidating the role of the frontal striatal system to behaviour.

Study design

Participants will be invited back to the VUmc for a shortened follow-up investigation, on two days.
- Day 1: Psychiatric questionnaires and neuropsychological tests; practicing the tasks for day 2.
- Day 2: undergoing an MEG scan (eyes open/eyes closed, 5 minutes each) and an MRI scan (Stop task, delay discounting task, anatomical scan, DTI scan, spectroscopy scan, resting state scan; together 50 minutes)

Intervention

Repetitive transcranial magnetic stimulation (rTMS) will be used to temporarily enhance the excitability of the dorsal prefrontal cortex in patients and, in contrast, to temporarily reduce dorsal responsiveness in healthy controls.

Study burden and risks

Participants will visit the VUmc during 2 separate days.
Day 1: 2 hours psychiatric and neuropsychological assessment
Day 2: 20 minutes Magnetoencephalography (MEG) scan session and 50 minutes MRI scan session during rest and during cognitive tasks.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

idiopathic PD, 40-65yo

Exclusion criteria

psychotropic medication
epilepsy
metal in body
pregnancy
other neurological disease
major somatic disorders
severe claustrophobia

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:	Basic science

Recruitment

NL

Recruitment status:	Completed
Start date (anticipated):	01-01-2009
Enrollment:	40
Type:	Actual

Ethics review

Approved WMO Date:	10-07-2008
Application type:	First submission
Review commission:	METC Amsterdam UMC
Approved WMO Date:	19-02-2014
Application type:	Amendment
Review commission:	METC Amsterdam UMC

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	NL23621.029.08