Body posture and motor imagery in Parkinson's Disease

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Investigate whether in Parkinson's Disease a disturbed body schema (awareness of one' own body posture) leads to disturbed motor planning, and whether brain regions involved in this process show an impaired activity.

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

Summary

ID

NL-OMON29780

Source
ToetsingOnline

Brief title
Motor imagery in Parkinson Disease

Condition

- Movement disorders (incl parkinsonism)

Synonym
Parkinson's Disease

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Sint Radboud
Source(s) of monetary or material Support: Alkemade-Keuls Fonds (particulier fonds dat onderzoek naar de ziekte van Parkinson steunt)

Intervention

Keyword: Body schema, functional magnetic resonance imaging, Motor imagery, Parkinson Disease

Outcome measures

Primary outcome

The primary study parameters are reaction times and cerebral activity (BOLD response). The influence of hand posture on an imagined movement with that hand is measured. This will reveal brain regions responsible for the coupling of body position and motor planning. Next, the connections between those brain regions and the basal ganglia will be measured. It will also be measured what the activity of those brain regions in the resting state is.

Secondary outcome

not applicable

Study description

Background summary

Parkinson's Disease is characterized by motor impairments such as tremor, bradykinesia and hypokinesia. Traditionally, it is thought that there is a direct relationship between impaired basal ganglia function and these motor impairments. However, since 20 years there is an increasing amount of evidence that motor impairments might also be caused trough an indirect causal relationship.

Namely, it has been found that PD patients exhibit, besides motor impairements, disturbances in proprioception. Proprioception is a sense that allows humans to notice the position of their own body in space. Little organs in muscles, tendons and joints sense the muscle tension and angle of the joints and convey that information to the brain. Reserach has demonstrated that the impairements in proprioception in PD patients is caused by disturbed central processing of these proprioceptive signals. Normal prioprioception is essential for normal movements. This research has lead to the belief, that in PD disturbed

proprioception may contribute to the motor disturbances.

However, until present it is unclear whether disturbed proprioception leads to disturbances on the level of motor planning. That means, that because of distubed proprioception the position of body parts is inadequately registered by the brain, which could lead to a distubed motor plan. Furthermore, it is unclear which brain structures are involved in these disturbances. Previous research by our group in healthy volunteers has shown that this coupling between position of the body part and the motor plan is made in the posterior parietal cortex. We want to investigate whether this brain region functions adequately in PD patients. This would provide important insights in the pathophysiological mechanism in PD, and it may also provide us with opportunities to develop therapeutical strategies aimed at restoring normal activity in this brain region.

Study objective

Investigate whether in Parkinson's Disease a disturbed body schema (awareness of one' own body posture) leads to disturbed motor planning, and whether brain regions involved in this process show an impaired activity.

Study design

observational

Study burden and risks

This research holds no risks at all for the patients involved. The burden consists of taking part in this research for three hours. During these three hours, the patient lies in an MRI scanner for about one hour, of which he/she has to concentrate on an experimental task for 40 minutes.

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 Parkinson's Disease
-Disease severity H&Y 1.5-3
-Mainly right side affected
-Right-handed

Exclusion criteria

-Dementia
-Neurological or psychiatric diseases
-Severe tremor of dyskinesias
-Claustrofobia
-Contraindications for MR-research, such as: pacemaker, insulin pump, metal implants in the body

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:	Pending
Start date (anticipated):	07-01-2006
Enrollment:	24
Type:	Anticipated

Ethics review

Approved WMO

Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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	NL13095.091.06