

Functional neural networks in dementia; a longitudinal MEG study

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Our overall aim is to obtain a better understanding of brain network damage in dementia patients. We propose a research project with two key objectives: 1. Develop improved methods to describe functional brain network damage 2. Relate network damage...

Ethical review	Approved WMO
Status	Pending
Health condition type	Neurological disorders NEC
Study type	Observational non invasive

Summary

ID

NL-OMON33698

Source

ToetsingOnline

Brief title

Functional neural networks in dementia

Condition

- Neurological disorders NEC

Synonym

Alzheimer's disease, dementia

Research involving

Human

Sponsors and support

Primary sponsor: Vrije Universiteit Medisch Centrum

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

Intervention

Keyword: alzheimer, connectivity, magnetoencephalography, network

Outcome measures

Primary outcome

Measures of functional connectivity; the synchronization likelihood and phase lag index (these are quantitative variables derived by a mathematical procedure using the original MEG signal).

Secondary outcome

Main network variables (described by graph theory applied to functional connectivity measures of MEG recordings) between patients and controls; the cluster coefficient (measure of local network structure) and the path length (measure of global network structure)

MMSE score and outcomes of other neurological tests.

Study description

Background summary

One of the central questions in neuroscience is how brain networks are related to cognitive function and, like in Alzheimer's disease (AD), to cognitive dysfunction. In order to solve this question, applying complex network theory to neuroscience data is a new and promising approach. Recently, abnormal structure of brain networks in dementia has been described. The cause and clinical significance of this *network randomisation* are not yet understood.

Study objective

Our overall aim is to obtain a better understanding of brain network damage in dementia patients. We propose a research project with two key objectives:

1. Develop improved methods to describe functional brain network damage
2. Relate network damage to clinical signs and disease course in dementia

Study design

a longitudinal magnetoencephalography (MEG) study; two times a MEG registration with cognitive testing (duration around 2 hours total), separated by a year.

Study burden and risks

The MEG procedure is completely non-invasive, risks associated with participation are negligible, and the burden can be considered minimal; it consists of sitting quietly in a closed room for 30 minutes, which can be aborted at any given time.

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

For patients:

- o Age between 18 and 85
- o Minimal MMSE score of 18
- o Recently diagnosed with *mild to moderate* Alzheimer*s disease or Frontotemporal dementia
- o Written informed consent

For healthy controls:

- o Age between 18 and 85
- o Written toestemming

Exclusion criteria

For both patients and healthy controls:

- o Other neurodegenerative or cerebrovascular disease
- o Psychiatric disease or symptoms
- o Insufficient mastery of the Dutch language
- o Inability to communicate adequately.

Study design

Design

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

Primary purpose: Basic science

Recruitment

NL	
Recruitment status:	Pending
Start date (anticipated):	01-05-2008
Enrollment:	80
Type:	Anticipated

Ethics review

Approved WMO

Application type:

First submission

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	NL21588.029.08