Metabolic network activity and atrophy patterns in patients with parkinsonian disorders

Published: 20-02-2009
Last updated: 06-05-2024

Databases with multimodal brain imaging data (FDG-PET, VBM, DTI) will be created. From these data image features and network patterns will be extracted, to be used to create a supervised classification method for associating brain patterns to...

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

Summary

ID

NL-OMON33983

Source
ToetsingOnline

Brief title
Brain network activity and parkinsonism

Condition

- Movement disorders (incl parkinsonism)

Synonym
idiopathic Parkinson's disease, multiple system atrophy, parkinsonism

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: DTI, FDG PET, parkinsonism, VBM

Outcome measures

Primary outcome

Network patterns will be extracted from the FDG PET data images. MRI examinations are used for to specify a precise degree of atrophy (VBM analysis) and tissue degeneration (DTI analysis). These PET and MRI output data will be used to define a specific disease related pattern for IPD and MSA.

Secondary outcome

not applicable

Study description

Background summary

The differential diagnosis of patients with parkinsonian disorders solely based on clinical criteria can be difficult, but is particularly important because they differ in progression, prognosis and treatment responses. A new developed FDG PET strategy uses multivariate analysis to identify disease-related spatial covariance patterns. This metabolic network approach is useful to characterise the unique metabolic patterns in neurodegenerative disorders. It has been suggested only by one research group, so it is very important to test the validity of described method in order to create a definite disease related pattern. Furthermore, published literature about metabolic network activity in neurodegenerative disorders did not include the precise degree of microscopic tissue degeneration or atrophy using modern MRI techniques. Voxel based morphometry (VBM), is a technique that objectively localizes focal grey and white matter atrophy throughout the entire brain. Diffusion Tensor MRI (DT MRI) is a quantitative technique that allows microscopic tissue abnormalities to be assessed non-invasively. It will be necessary to include patterns of atrophy and tissue degeneration in order to create a reliable and early disease related pattern. These methods combined can be used to identify an early and specific diagnosis in individual patients.

Study objective

Databases with multimodal brain imaging data (FDG-PET, VBM, DTI) will be created. From these data image features and network patterns will be extracted, to be used to create a supervised classification method for associating brain patterns to various stages of neurodegenerative diseases.

Study design

In this observational case control study, 15 patients with idiopathic Parkinson*s disease (IPD) and with 15 patients multiple system atrophy (MSA) as well as 15 gender- and age matched healthy volunteers will be included. All subjects will undergo neurological- and neuropsychological examination as well as 1 FDG PET scan and 1 MRI scan according to protocol.

Study burden and risks

The risks and burden associated with participation are considered negligible and minimal the since there is great experience in normal diagnostic work up with these PET and MRI investigations and significant side effects are not mentioned. This study can not be conducted without the participation of sufficient subjects in each group. This study can contribute to a better understanding and early diagnosis in patients with parkinsonian disorders.

Contacts

Public
Universitair Medisch Centrum Groningen

Hanzeplein 1 postbus 30 001
9700 RB Groningen
NL
Scientific
Universitair Medisch Centrum Groningen

Hanzeplein 1 postbus 30 001
9700 RB Groningen
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

patients: fulfill the typical diagnostic criteria of IPD and MSA
volunteers: normal clinical and neuropsychological examination, > 50 years

Exclusion criteria

claustrophobia or other exclusion criteria for MRI scanning
patients: other systemic disease who can cause listed complaints.

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):	28-09-2009
Enrollment:	45
Type:	Actual

Ethics review

Approved WMO
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	NL25325.042.08