Motor fatigue and cognitive performance in secondary progressive MS patients

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How large is the force decrease in patients with secondary progressive MS, what is causing this decrease. In addition, is the cognitive performance of secondary progressive MS patients influenced by a fatiguing motor task?

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Demyelinating disorders
Study type	Interventional

Summary

ID

NL-OMON37525

Source
ToetsingOnline

Brief title
Motor fatigue and cognitive performance in SP-MS patients

Condition

- Demyelinating disorders

Synonym
Multiple sclerosis

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: cognitive function, motor fatigue, secundairy progressive MS

Outcome measures

Primary outcome

The primary parameters are the changes in maximal force and central activation during the fatiguing task, the number of correct responses on the CRT and the reaction times of these reactions.

Secondary outcome

none

Study description

Background summary

Fatigue is one of the most common complaints in MS and can influence the execution of daily tasks. The cause of the fatigue is not yet known (Tartaglia, 2004). In healthy people, fatigue of the central nervous system can be induced by repetitive activation of a small hand muscle. (Zijdewind et al, 1998, 1999 en 2001). This fatigue also results in secundary cognitive problems (Lorist et al, 2002; van Duinen et al 2005, Zijdewind et al, 2006). The study of the central mechanisms underlying fatigue has been given little attention.
The goal of this research is to determine the decrease in force during a fatiguing task in patients with secondary progressive MS and the mechanisms causing the force to decrease. Previous research has shown that in a group of relapsing remitting MS patients the decrease in force is fairly similar to healthy controls, but a different mechanism is responsible (Steens et al 2011). We expect that the maximal force in patients with secondary progressive MS will be lower than that of relapsing remitting patients or healthy controls. Therefore, we expect less decrease of force, but the mechanism of decrease might be the same as for the relapsing remitting group. Another goal of this research is to study the influence of a fatiguing motor task on the cognitive performance. A previous pilot indicates that patients with MS, as opposed to healthy controls, are affected by a fatiguing motor task. However, this was a small, heterogenic group relapsing remitting patients. This research therefore studies whether secondary progressive MS patients are affected negatively by a fatiguing motor task on a subsequent cognitive task. We expect secondary

progressive patients to perform worse on a cognitive task after a fatiguing motor task, but we think that the performance can recover over time.

Study objective

How large is the force decrease in patients with secondary progressive MS, what is causing this decrease. In addition, is the cognitive performance of secondary progressive MS patients influenced by a fatiguing motor task?

Study design

During the experiment the force (using a force transducer) and muscle activity (using EMG-electrodes) of the abductor of the right index finger (FDI) will be measured. At the same time, the nerve that innervates this muscle will be stimulated electrically. The patients will be asked to execute a 2-choice reaction time task (CRT), both before and after a fatiguing motor task.

Intervention

Fatigue task

Study burden and risks

No risk, time investment for the subject is 2 hours

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

Secondary progressive multiple sclerosis
Pegboard test score on right hand >8
Sufficient hand function to operate force transducer and serial response buttons
righthandedness
Informed consent

Exclusion criteria

Neurological disorder other than MS
Psychiatric disorder
Depression
Hearing disorder or visual disorder that prevents subject to hear/see the stimuli of the test

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped

Start date (anticipated):	09-01-2012
Enrollment:	50
Type:	Actual

Ethics review

Approved WMO Date:	23-11-2011
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)
Approved WMO Date:	22-08-2012
Application type:	Amendment
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	NL37836.042.11