Excitability of the motor cortex during motor imagery and observation in patients with Complex Regional Pain Syndrome (CRPS) and tonic dystonia

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to find evidence for frontal inhibition during planning of explicit movements just as seen in patients with conversion disorders.

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

Summary

ID

NL-OMON37352

Source
ToetsingOnline

Brief title
Excitability M1 CRPS

Condition

- Movement disorders (incl parkinsonism)
- Changes in physical activity

Synonym
post traumatic dystrophy, Sudecks dystrophy

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum

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

Intervention

Keyword: CRPS, motor cortex, TMS, Tonic dystonia

Outcome measures

Primary outcome

cortical excitation and inhibition

Secondary outcome

results of the questionnaires.

-pain scores

-activity score of the affected hand

-traumatic experience in past

-score of disability

Study description

Background summary

The etiology of tonic dystonia in Complex Regional Pain Syndrome (CRPS) is unknown. There are some indications that it is a functional movement disorder. This means that their is no known underlying organic pathology (eg stroke). Clinically this is reflected in signs that are not present in all situations.

A hypothesis for the etiology of conversion disorders is frontal inhibition. This means that the brains themselves inhibit movement programmes resulting in paralysis. The assumption is that this is caused by a traumatic experience in the past. In new and threatening situations the brain overreacts which causes the movement disorder.
It is unknown whether movement disorders such as tonic dystonia (with increased instead of decreased muscle tone is present) are due to a similar mechanism. Although there is no evidence, this is often assumed for CRPS patients with dystonia and therefor these patients are often portrayed as conversion

patients.

Study objective

to find evidence for frontal inhibition during planning of explicit movements just as seen in patients with conversion disorders.

Study design

Two situations.

1: Participants are asked to watch a video that shows a moving hand (opening and closing of a hand) in first persons perspective. (as if it is their own hand). It is known that the spectator (unconsciously) replicates the movement in the brain. He or she is told not to move their own hand. While watching the videos, a TMS signal is induced over the motor cortex. The evoked Motor Evoked Potentials (MEP) are measured in muscles of the hand tested. Cortical inhibition will be reduced by watching the movie (MEPs are higher in comparison to rest) which means the cortex is active. This is expected in all groups.

2: The video is removed and participants are explicitly asked to visualize the movement observed in situation one. Again, they are instructed not to move their hand. This is an explicit command that in convertion patients results in inhibition of the motor cortex measured in the same way as above. (the cortex is less active) This inhibition is expected to occur in CRPS patients.

Study burden and risks

TMS is a safe and pain-free study method. Only when TMS is used for a long period of time or with a very high intensity , there is an increased risk of seizures in people who are already familiar with epilepsy. This has never happened with the duration and intensity used in this study. In addition, people with a history of epilepsy are excluded.

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

3 groups of patients
-CRPS
-CRPS AND tonische dystonia
-wrist fractures

Exclusion criteria

serious neurological illness, a history of traumatic brain injury or epilepsy or the presence of any condition other than CRPS, CRPS-related dystonia or recent wrist fracture that is associated with pain or functional impairment of an upper extremity.

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:	Recruitment stopped
Start date (anticipated):	10-04-2012
Enrollment:	40
Type:	Actual

Ethics review

Approved WMO

Date:	26-03-2012
Application type:	First submission
Review commission:	METC Leiden-Den Haag-Delft (Leiden) metc-ldd@lumc.nl

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	NL39237.058.12