Muscle relaxation properties in myopathies with positive muscle phenomena: a study using transcranial magnetic stimulation

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To quantify muscle relaxation properties of fingerflexors using transcranial magnetic stimulation in patients with different myopathies to develop a screening diagnostic tool to assess who does (not) suffer from an underlying myopathy.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Musculoskeletal and connective tissue disorders congenital
Study type	Observational invasive

Summary

ID

NL-OMON43031

Source
ToetsingOnline

Brief title
Muscle relaxation in myopathies with positive muscle phenomena

Condition

- Musculoskeletal and connective tissue disorders congenital
- Muscle disorders

Synonym
muscle disorder, Myopathies

Research involving
Human

Sponsors and support

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

Intervention

Keyword: Muscle relaxation, Myopathy, Transcranial magnetic stimulation

Outcome measures

Primary outcome

Peak relaxation rate normalized for force

Relaxation times: 0.9RT, 0.75RT, 0.50RT, 0.25RT

E.g. 0.50RT is the time needed for force to drop from 100% to 50% of maximal

force

Secondary outcome

Maximal force of fingerflexors

Study description

Background summary

Transcranial magnetic stimulation can induce involuntary muscle relaxation by interrupting corticospinal drive to the muscle (~200ms). Previous research using this method has demonstrated that patients with Brody disease had significantly slower muscle relaxation as compared to healthy controls. We want to study if slowed muscle relaxation is also seen in other myopathies with positive muscle phenomena (muscle cramp, stiffness and myalgia) and possibly also in myopathies with mainly negative muscle phenomena (atrophy, weakness).

Study objective

To quantify muscle relaxation properties of fingerflexors using transcranial magnetic stimulation in patients with different myopathies to develop a screening diagnostic tool to assess who does (not) suffer from an underlying myopathy.

Study design

Experimental research to dermine muscle relaxation properties using transcranial magentic stimulation in different myopathies compared to healthy controls with comparable complaints (positive muscle phenomena, without an underlying myopathy).

Study burden and risks

One visit to our lab of 45 minutes. There will be slight discomfort from the TMS (mild headache in 2-4% of subjects).

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

Diagnosis of one of the following myopathies:
- Nemaline myopathy type 6 (NEM6)
- Ryanodine receptor type 1 related myopathy (RYR1)
- Myotonic dystrophy type 2 (DM2)
- Mitochondrial myopathy
- McArdle disease
- Facioscapulohumeral muscular dystrophy (FSHD)

Exclusion criteria

Age <18
Pregnancy
Serious head trauma or brain surgery
Large or ferromagnetic metal parts in the head
Implanted cardiac pacemaker or neurostimulator
Epilepsy, convulsion or seizure
Use of medication that can influence muscle relaxation or cortical excitability

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	05-01-2017
Enrollment:	85
Type:	Actual

Ethics review

Approved WMO Date:	29-06-2016
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	NL57301.091.16