Interactions in motor performance between the upper limbs after a first Stroke event:
the effect of a contra lateral task on admittance and reflex gain of the wrist joint in the paretic arm

Published: 15-02-2013
Last updated: 26-04-2024

The primary objective is to establish the effect of a unilateral task performed with the non-paretic arm on dynamic joint admittance and reflex gain of the wrist of the paretic arm in stroke patients compared to the effect of a unilateral task on...

Ethical review	Approved WMO
Status	Will not start
Health condition type	Central nervous system vascular disorders
Study type	Observational non invasive

Summary

ID

NL-OMON36862

Source
ToetsingOnline

Brief title
Bimanual control interactions after stroke

Condition

- Central nervous system vascular disorders

Synonym
cerebral hemorrhage, cerebral infarction, stroke

Research involving

Human

Sponsors and support

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

Intervention

Keyword: Bimanual, Coordination, Stroke, Wrist

Outcome measures

Primary outcome

Dynamic joint admittance (comprised of inertia, viscosity and stiffness) and

reflex gain of the wrist joints.

Secondary outcome

Demographics: date of birth, gender, hand dominance.

Clinical phenotype: type of stroke (ischemic or hemorrhagic), lesion side, time

after stroke, voluntary muscle strength of wrist flexors and extensors (0-5

Medical Research Council (MRC) scale), disturbances in gnostic sensibility.

Study description

Background summary

Upper extremity dysfunction is a major problem after stroke. Therapeutic interventions for upper extremity dysfunction after stroke can be broadly divided in unilateral arm training, such as constraint-induced movement therapy (CIMT), and bilateral arm training (BAT). Insufficient evidence is available for targeted therapy for the individual patient, urging the need for an objective method to rationalize diagnostics and therapy choice. The strength (and location) of neural interaction may determine the success of either treatment. We will apply haptic manipulators to quantify bimanual wrist joint admittance and reflexive interactions in controls and patients. With this study we aim to reveal whether the bimanual neural interaction between controls and patients differs in strength and variability. The method may result in a fast

and functional clinical method to distinguish which patient is most likely to benefit from BAT.

Study objective

The primary objective is to establish the effect of a unilateral task performed with the non-paretic arm on dynamic joint admittance and reflex gain of the wrist of the paretic arm in stroke patients compared to the effect of a unilateral task on the contra lateral arm in controls.

The secondary objective is to determine the differences within the patient group and relate these to patient characteristics, such as hand dominancy, lesion side and function.

Study design

Case-control observational study.

Study burden and risks

Patients will undergo a short clinical examination for clinical phenotyping focused on muscle strength and sensibility and functional disorders in the lower arm. The total duration of the trials will be approximately 60 minutes. There are no specific risks associated with participation.

Contacts

Public
Leids Universitair Medisch Centrum

Albinusdreef 2
Leiden 2333 ZA
NL
Scientific
Leids Universitair Medisch Centrum

Albinusdreef 2
Leiden 2333 ZA
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

1. Unilateral stroke
2. Paresis of the affected arm (NIHSS 1-2, visible active wrist extension possible)
3. six months to five years post stroke
4. Age above 18 years

Exclusion criteria

1. Shoulder-hand syndrome post-stroke
2. Wrist paralysis
3. Severe contractures of wrist and/or fingers post-stroke
4. History of wrist disorders, such as traumata and rheumatic diseases
5. History of other neurologic diseases that affect muscle strength and sensory feedback in the arms
6. Unable to understand and follow the instructions

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:	Diagnostic

Recruitment

NL

Recruitment status:	Will not start
Enrollment:	30
Type:	Anticipated

Ethics review

Approved WMO

Date:	15-02-2013
Application type:	First submission
Review commission:	METC Leids Universitair Medisch Centrum (Leiden)

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	NL41580.058.12