Brain research in Whiplash Associated Disorder

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Measuring the brain activity in patients with chronic WAD and compare the results with those obtained in healthy volunteers. The goal of this research is to better understand the cause of chronic WAD and how to better treat the WAD-patients.

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

Summary

ID

NL-OMON35947

Source
ToetsingOnline

Brief title
BRIWAD

Condition

- Musculoskeletal and connective tissue disorders NEC

Synonym
whiplash; craniocervical acceleration trauma

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: Neck Muscles, Neuroimaging, Positron Emission Tomography, Whiplash

Outcome measures

Primary outcome

The primary objective is to compare regional cerebral blood flow (rCBF) in response to non-painful neck stimulus, between patients with WAD and healthy matched control volunteers, ascertained by Positron Emission Tomography (PET) scan. Each subject will be exposed to four different conditions: rest state, placebo-like stimuli, low intensity stimuli, and high intensity neck stimuli.
The rCBF corresponding to exposure to each stimulus is measured in the brain by PET.

Secondary outcome

The secondary objective is to determine if there is a correlation between rCBF response and the results in the questionnaires.

Study description

Background summary

After a sudden stretch of cervical soft tissues, pain can be developed in the neck, head or shoulders, and even eradiate to the arms , with or without paraesthesia in the fingers. This stretch occurs as a consequence of an acceleration-deceleration injury to the neck, where rear-end motor vehicle collision is the most common cause.
In most cases the complaints caused by the injury disappear within several weeks or months, but in some patients the complaints do not disappear, but become even worse over time. These complaints include a variety of disturbed mental functioning, decreased physical capabilities and fatigue. This condition is known as chronic Whiplash Associated Disorder (WAD). Several patients with chronic WAD also complain about vision problems, difficulties with reading, vertigo, dizziness and balance disturbances. A significant portion of these

patients also have memory and concentration problems. The cause of chronic WAD is still unknown, although females have an increased risk to undergo a rear-end motor vehicle collision as well a higher risk for developing chronic WAD.
Despite the symptoms in WAD appear as brain-related symptoms, until now no brain damage has been demonstrated in these patients.
We propose that in this patients the brain function is disturbed, especially in the midbrain or mesencephalon. The reason for this disturbance may be that during the sudden unexpected stretch of soft tissues in the neck during the injury, local receptors might be damaged. These damaged receptors send wrong information to the mesencephalon, leading to misinterpretation of the information by higher brain centers, because they don't fit with the other incoming information from the vestibular organs as well from the visual system. This inconsistency of information can lead to symptoms as in chronic WAD patients. Another possibility is that the sudden stretch during the cranial-cervical acceleration injury caused damage to the mesencephalon itself leading to functional disfunctioning.
With our experimental set-up, we want to determine the resulting brain activation and de-activation in patients with chronic WAD and in healthy volunteers.
The results can give us more insight in the cause of chronic WAD and may lead to better treatment in the future.

Study objective

Measuring the brain activity in patients with chronic WAD and compare the results with those obtained in healthy volunteers. The goal of this research is to better understand the cause of chronic WAD and how to better treat the WAD-patients.

Study design

Observational study

Study burden and risks

Subjects have to complete a physical and neurological examination, fill some questionnaires and undergo a PET scan. For the PET scan, a possible adverse event can be a small bruise as a result of the catheter, or some discomfort in the scanner. No adverse effects have been reported in the international literature, for the use of 15O-water. Patients will not obtain direct benefit from the study, but if positive results are obtained, it may lead to new therapies and diagnosis techniques in whiplash injury.

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

Females, between 18 and 45 years.
Right-handed
Body Mass Index equal/less than 29
For patients:
Rear end automobile collision
Whiplash Associated Disorder (WAD) classified as grade I or II
At least 2 years from the accident, up to 10 years.
No treatment for WAD other than painkillers

Exclusion criteria

Pregnant or in menopause.
Use of anticoagulants, medication that affect the immune system or investigation drug.
Current or recent alcohol or substance abuse.
Current or recent infectious, inflammatory, metabolic or systemic disease.
Impossibility to perform a PET scan (claustrophobia...)
Diagnosis of Depression or Anxiety.

Study design

Design

Study type:	Observational 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):	18-01-2012
Enrollment:	32
Type:	Actual

Ethics review

Approved WMO

Date:	08-07-2011
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	NL35427.042.11