Functional MRI during Sleep in Patients with Posttraumatic Stress Disorder

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The current study assesses activation of hippocampus and prefrontal cortex during sleep spindles in veterans with and without PTSD. Furthermore, the correlation between sleep spindles and memory consolidation will be examined.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Sleep disturbances (incl subtypes)
Study type	Observational non invasive

Summary

ID

NL-OMON31936

Source
ToetsingOnline

Brief title
fMRI during sleep in PTSD

Condition

- Sleep disturbances (incl subtypes)
- Anxiety disorders and symptoms

Synonym
psychotrauma, traumatic stress

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: Ministerie van Defensie

Intervention

Keyword: EEG, fMRI, PTSD, sleep

Outcome measures

Primary outcome

Activation of hippocampus and prefrontal cortex during sleep spindles in PTSD subjects as compared with healthy veterans.

Secondary outcome

The correlation between delayed recall of the 15 word test and activation of hippocampus and prefrontal cortex during sleep spindles.

Study description

Background summary

Approximately 5 - 15 per cent of veterans returning from deployment develop PTSD. PTSD complaints consist of intruding memories, nightmares, irritability, insomnia and memory deficits.
PTSD patients exhibit altered activity in brain areas that are involved in anxiety and memory (hippocampus and prefrontal cortex). These brain areas are active during sleep spindles, which are associated with memory consolidation during sleep. Possibly, these brain areas show altered activity during sleep spindles in PTSD subjects. This may influence memory functions in PTSD patients.

Study objective

The current study assesses activation of hippocampus and prefrontal cortex during sleep spindles in veterans with and without PTSD. Furthermore, the correlation between sleep spindles and memory consolidation will be examined.

Study design

All subjects will undergo clinical interviews and fill out questionnaires assessing sleep quality. When eligible for the study, they will sleep for 45 minutes in a MRI scanner during early night hours. EEG registrations will be obtained during scanning. Sleep spindles will be identified on the EEG and

coupled with fMRI scans. fMRI BOLD signal during spindles will be compared with BOLD signal during non REM sleep (without spindles).
Before scanning, the 15 word task, Bourdon Wiesrma Task, and 3 subtests from the WAIS III will be administered. The delayed recall of the 15 words will be assessed on the morning after scanning.

Study burden and risks

This study will provide unique information on PTSD, sleep and memory. The risks involved with this study are small. With the methodology of simultaneous EEG and fMRI, brain activity will be examined in brains structures relevant for PTSD and for sleep. This may provide evidence for what mechanisms are involved in sleep disturbances in PTSD. This is relevant because no clear objective markers of disturbed sleep in PTSD have yet been identified.
Furthermore, this study may contribute to a body of knowledge on memory processing during sleep, which may be disturbed in PTSD. Memory deficits are often reported by PTSD patients.
Risks involved with this study are minimal. Subjects will be removed from the scanner when they feel anxious or want to stop for any other reason. The current EEG material is compatible with the 3 tesla MRI and has been tested for this purpose (see attachment *methode en veiligheid EEG-fMRI").

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

- PTSD diagnosed by DSM-IV criteria, and confirmed by a diagnostic interview (SCID) (only for patients)
- CAPS score > 50 (only for patients)
- Male
- Age between 18 and 60 years
- Exposure to deployment based traumatic stress

Exclusion criteria

- Antidepressant usage within 2 months prior to the start of the study
- Usage of any other psychotropic medication within 4 weeks prior to the start of the study
- History of psychiatric disease (controls), neurological illness (all subjects), of systemic disease (all subjects)
- Sleep disturbed breathing or periodic limb movement disorder
- History of alcohol and/or drug abuse (DSM-IV criteria) within 6 months prior to the study
- Metal objects in or around the body (braces, pacemaker, etc)

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):	11-09-2008
Enrollment:	18
Type:	Actual

Ethics review

Approved WMO

Date:	20-05-2008
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

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	NL21701.041.08