On the relationship between brain structure and oscillatory activity in ADHD children

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON27284

Source
Nationaal Trial Register

Brief title
SHARK2

Health condition

ADHD

Sponsors and support

Primary sponsor: Donders Institute Nijmegen
Source(s) of monetary or material Support: Marie Slodowska Curie

Intervention

Outcome measures

Primary outcome

-oscillatory power modulation during attentional performance

- DTI measures - FA and volume of major tracts associated with dopaminergic signaling (focus

on Superior Liongitudinal Fasciculus)
- striatal brain volume

Secondary outcome

na

Study description

Background summary

Within the domain of spatial attention, it has been shown that changes in neuronal synchronization are fundamental to implement the mechanisms required for selective gating. Specifically, modulations in both the alpha (8-13Hz) and gamma band (30-90Hz) are predictive of performance in spatial attention tasks. Studies have reported that patients with Attention Deficit and Hyperactivity
Disorder (ADHD) show a reduced ability to modulate alpha band oscillations during covert attention, when compared to controls5. Stimulant medications (e.g. Methylphenidate) often provide effective treatment for ADHD symptoms, while little is known about the neuronal mechanisms by which they exert their effect. Given the role of neuronal oscillatory modulations in attentional performance, pharmacological intervention is expected to normalize the eventual differences in alpha and gamma band synchronization between ADHD patients and healthy subjects. Furthermore, investigation of anatomical differences between the two groups is performed to
identify the brain structures responsible for top-down attentional modulation.

Study objective

Within the domain of spatial attention, it has been shown that changes in neuronal synchronization are fundamental to implement the mechanisms required for selective gating. Specifically, modulations in the alpha (8-13Hz) and gamma band (30-90Hz) are predictive of performance in spatial attention tasks. Studies have reported that patients with Attention Deficit and Hyperactivity Disorder (ADHD) show a reduced ability to modulate alpha and gamma band oscillations during covert attention, when compared to controls. In addition, power modulation in the beta (15-30Hz) and Mu (9-11Hz) frequency bands, have also been shown to differ between controls and ADHD, hence indexing aberrant stimulus processing and motor activity. Stimulant medications (e.g. Methylphenidate) often provide effective treatment for ADHD symptoms, while little is known about the neuronal mechanisms by which they exert their effect. Given the role of neuronal oscillatory modulations in attentional performance, pharmacological intervention is expected to normalize the eventual differences in brain oscillations between ADHD patients and healthy subjects. Furthermore, investigation of anatomical differences between the two groups is performed to identify the brain structures responsible for top-down attentional modulation.

Study design

- variables measured during experiment

for ADHD, MEG and MRI data measured on and off (placebo) medication (1 week between two recordings)

Intervention

on/off medication (placebo / active medication(methykphenidate)) for the ADHD group.
no intervention for control group.

Contacts

Public
Donders Institute
C Mazzetti
Kapittelweg 29

Nijmegen 6525EN
The Netherlands
+41 779383973
Scientific
Donders Institute
C Mazzetti
Kapittelweg 29

Nijmegen 6525EN
The Netherlands
+41 779383973

Eligibility criteria

Inclusion criteria

controls

- 8-12 years old

- male

- no psychiatric dysorder

- IQ >80

ADHD

- diagnosis of ADHD (DSM IV)

- score in clinical range of ADHD rating scale

- Pharmacological treatment with Stimulant medication for the treatment of ADHD (either long- or shortacting
formulations), which started at least 3 months before the inclusion in the study.

Exclusion criteria

(1) Neurological disorders (e.g. epilepsy) currently or in the past.

(2) Cardiovascular disease currently or in the past.

(3) Serious motor or perceptual handicap.

(4) Standard MRI Exclusion criteria according to DCCN regulations.

The presence of comorbid symptoms will be documented: for the control group, by scores for problem
behaviours on the Childhood Behavior Checklist (CBCL) , completed by the parents; For the ADHD group
a psychiatrist from the Karakter Instituut will perform a clinical evaluation assessing eventual comorbities.

Study design

Design

Study type: Observational non invasive

Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Double blinded (masking used)
Control:	Placebo

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-09-2016
Enrollment:	60
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	20-02-2017
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 43451
Bron: ToetsingOnline
Titel:

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL6157
NTR-old	NTR6304
CCMO	NL56007.091.15
OMON	NL-OMON43451

Study results