Uncovering the genetic basis of schizophrenia: which genes matter the most?

Published: 03-06-2008
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The aim of the current study is to investigate which gene-abnormalities can be related to brain deficits and symptoms associated with schizophrenia.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Schizophrenia and other psychotic disorders
Study type	Observational non invasive

Summary

ID

NL-OMON31499

Source
ToetsingOnline

Brief title
Genetic basis of schizophrenia

Condition

- Schizophrenia and other psychotic disorders

Synonym
schizophrenia

Research involving
Human

Sponsors and support

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

Intervention

Keyword: fMRI, genetics, schizophrenia

Outcome measures

Primary outcome

- Differences in brain activity as measured with functional MRI between siblings with various allele-variants per candidate- gene

- Differences in brain activity as measured with fMRI between siblings with psychotic or schizotypic symptoms compared to siblings without such symptoms

- Differences in genetic profile of:

o Siblings with psychotic or schizotypic symptoms

o Siblings without psychotic or schizotypic symptoms

o A matched population of healthy controls

Secondary outcome

Brain activity as measured with functional MRI, expressed in percent signal change.

Control variables:

- behavioural measures, expressed in reaction times (ms) and accuracy

- heart rate, expressed in beats per minute (bpm), heart rate variability

- respiration, expressed in respiration volume per time

Study description

Background summary

Schizophrenia is associated with a number of functional brain deficits, among which are working memory, inhibition, emotional processing, as well as deficits in neural systems that support cognitive functioning. These deficits can be used as biomarkers to facilitate the search of those genes or combinations of genes involved in the development of schizophrenia.

Schizophrenia is a chronic disorder, affecting about 1 percent of the population. It is now commonly accepted that schizophrenia has its origin, for at least a part, in genetic abnormalities as siblings of patients have a 10 % chance of developing the disorder themselves. In addition, although siblings can perform similar to healthy controls on various tasks, their brain activation is similar to that of schizophrenia patients.

Study objective

The aim of the current study is to investigate which gene-abnormalities can be related to brain deficits and symptoms associated with schizophrenia.

Study design

Using functional MRI, subjects (n=260) are scanned on five different paradigms known to yield abnormal brain activation in schizophrenia patients, being resting-state, inhibition task, working-memory task, an emotional processing task and associative memory task. Brain activation will be associated with the various SNPs for a number of candidate genes as well as with clinical data.

During fMRI acquisition, heart rate and respiration will be recorded.

Study burden and risks

Scanning will take approximately 60 min in total per session for each subject. Functional MRI is a non-invasive technique, so there is no need for special preparation for the subject. There are no known risks associated with functional MRI acquisition. The data are primarily used for research purposes. However, severe abnormalities may be noticed, in which case a specialist (radiologist) may be asked for advice, upon decision of the research team. If the specialist confirms that medical treatment is indicated, then the subject will be notified.

Besides financial remuneration, no immediate benefits are to be expected from participation in this study for the subjects. In the long run, increased understanding of the relationship between brain function, genes, and symptomatology can contribute to diagnosis, early detection, and prediction of treatment outcome for schizophrenia.

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

age between 18 and 50;specific for schizophrenia patients: DSM-IV diagnosis of schizophrenia

Exclusion criteria

- Ferrous objects in or around the body (e.g. braces, glasses, pacemaker, metal fragments)
- Drug or alcohol abuse over a period of six months prior to the experiment
- History of closed- or open-head injury
- History of neurological illness or endocrinological dysfunction
- Claustrophobia
- Major medical history
- Chronic use of medication

- History of epilepsy
- History of epilepsy in first-degree relatives
- Incapability of giving an informed consent
- Symptoms indicative of schizophrenia (healthy controls only)
- Symptoms indicative of schizophrenia in first-degree relatives (healthy controls only)
- pregnancy

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:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	11-09-2008
Enrollment:	260
Type:	Actual

Ethics review

Approved WMO

Date:	03-06-2008
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	NL21223.041.07