Tonotopy and Modulotopy of the Auditory Cortex

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Hearing disorders
Study type	Observational non invasive

Summary

ID

NL-OMON37482

Source
ToetsingOnline

Brief title
TAMAC

Condition

- Hearing disorders

Synonym
nvt

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: auditory, fMRI, modulotopy, tonotopy

Outcome measures

Primary outcome

Audiometric and psychometric values obtained in a diagnostic protocol, and

stimulus-evoked as well as spontaneous BOLD fMRI signals in the brain.

Secondary outcome

Effect of attention (focus on various tasks) on the fMRI results of the

auditory cortex.

Study description

Background summary

Sound information that is neurally encoded in the peripheral hearing organs is transmitted towards various regions in the auditory cortex. This pathway encodes acoustic attributes of sound (e.g. frequency spectrum) and its characteristics have been studied relatively well in animal models and humans (Eggermont 2001).

Previous research into the auditory cortex has shown that there are a number of cortical fields which have a tonotopical map or a modulotopical map, i.e. organization based on sound frequency or modulation frequency, respectively (Langers & van Dijk 2011, da Costa et al 2011, Talavage et al 2004, Giraud et al 2000). The aim of this study is to identify and use the various maps to distinguish between the cortical fields.

Study objective

The primary objective is to measure and characterize the tonotopy and modulotopy of the primary auditory cortex in normal hearing subjects. Measurements will be performed both during a normal resting state, as well as during the performance of an auditory and a non-auditory task, while the frequency and amplitude modulation rate of the stimuli are varied. The tasks have the aim to focus the attention of the subject either toward the auditory stimulation, for the auditory task, or to place the subjects focus on a visual

task, away from the auditory stimulation.

Study design

Exploratory study.

Study burden and risks

The clinical diagnostic tests involve several audiometric tests, and the administration of questionnaires (approx. 2 hours.). A single fMRI scanning session will take place on the same day (approx. 2 hours). None of the procedures expose the subject to known risks.

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

Normal hearing

Exclusion criteria

Hearing disorders, standard MRI-exclusion criteria (implants etc).

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-06-2012
Enrollment:	20
Type:	Anticipated

Ethics review

Approved WMO

Date:	27-06-2012
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	NL40057.042.12