Neural reorganization in tinnitus: a high-field fMRI study

No registrations found.

Ethical review	Not applicable
Status	Pending
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON23745

Source
Nationaal Trial Register

Brief title
Neural reorganization in tinnitus

Health condition

tinnitus, phantom sound perception (NL: oorsuizen)

Sponsors and support

Primary sponsor: Maastricht University
Source(s) of monetary or material Support: Scanning costs are covered by Brains Unlimited Pioneer Fund (Universiteitsfonds Limburg/SWOL Maastricht) and FPN/MBIC funds. Patient payment is covered by other funds (Veni to Lars Riecke granted by NWO).

Intervention

Outcome measures

Primary outcome

The link between frequency tuning and tinnitus will be tested by comparing the size and response magnitude of the auditory cortex regions that show tuning to the patient’s specific tinnitus frequency vs. regions that show tuning to the other (non-tinnitus) frequencies. In this

way, patients can serve as their own controls, in addition to matching healthy controls.

Secondary outcome

Furthermore, anatomical features (measures of myelin content and cortical thickness) will be assessed in the same regions of interest as mentioned in the primary outcome.

Study description

Background summary

The general goal of our study is to unravel the anatomical and functional correlates of tinnitus in the human brain using structural and functional magnetic resonance imaging (MRI). We will use a high-field (7 T) MRI scanner and obtain a) detailed information about brain anatomy in the central auditory system and b) measure functional responses in the auditory cortex in order to assess the overall activation level and the tonotopic organization of auditory cortex.

Study design

After the fMRI scan (2nd meeting), the study ends.

Intervention

In a first session, at the otorinolaryngologie department, a hearing test will be combined with matching of the tinnitus (subjective loudness and pitch). In the second session, at Scannexus, the patients will be asked to take place in the MRI scanner. Patients will be asked to lay as still as possible and to react (with a button press) when hearing specific sounds. The total scanning time is approximately 55 minutes.

Contacts

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Eligibility criteria

Inclusion criteria

The main inclusion criteria of the patient groups are:

• Male or female between 18 and 75 years

• Subjective tinnitus (i.e. not caused by an acoustic source inside the head, e.g., vascular abnormalities that cause pulsatile tinnitus)

• Stable tinnitus (i.e., present for at least 8 h per day since more than a year)

• Tinnitus that is dominant within one of three octaves (low: <750 Hz, middle: 750-3000 Hz, high: >3000 Hz; the exact frequency ranges will be determined empirically based on patient availability)

• Patient has not received medical care from an otolaryngologist and is able and willing to undergo the MRI measurements, as indicated by written informed consent.

The main inclusion criteria of the healthy subjects are:

• Male or female between 18 and 75 years

• No tinnitus

• Subject is able and willing to undergo the MRI measurements, as indicated by written informed consent.

Exclusion criteria

Exclusion criteria of the patient groups are:

• Fletcher Index > 50 dB HL for both ears (i.e., mean of hearing loss in decibels for 1k, 2k and 4k Hz)

• Hyperacusis (oversensitivity to sound), phonophobia (defined as a persistent, abnormal,

and unwarranted fear of sound), misophonia (dislike of certain sound),

• Neurological-, neurosurgical- and psychiatric history

• Use of dopaminergic drugs since this medication greatly influence the fMRI scans (Haslinger et al., 2001, Mattay et al., 2002)

• Morbid obesitas (BMI > 35) since it cannot be guaranteed that these subjects will fit in the scanner

• Current treatment of tinnitus and implanted devices or other metal objects that are not suitable for MRI.

Exclusion criteria of the healthy subjects are:

• Fletcher Index > 50 dB HL for both ears (i.e. mean of hearing loss in decibels for 1k, 2k and 4k Hz)

• Hyperacusis (oversensitivity to sound), phonophobia (defined as a persistent, abnormal, and unwarranted fear of sound), misophonia (dislike of certain sound),

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Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-09-2014
Enrollment:	26
Type:	Anticipated

Ethics review

Not applicable

Application type:	Not applicable

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
NTR-new	NL4593
NTR-old	NTR4752
Other	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht) : ABR concept 49812

Study results