Glioma Oscillatory Activity as a potentiaLly Sensitive biomarker for tumor growth

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1) higher oscillatory activity relates to faster subsequent glioma growth and 2) lower global oscillatory activity of the EEG also reflects lower NLGN3 expression of the resected tumor tissue

Ethische beoordeling	Positief advies
Status	Werving gestart
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON20940

Bron
NTR

Verkorte titel
GOALS

Aandoening

Glioma

Ondersteuning

Primaire sponsor: Amsterdam UMC – Locatie VUmc
Overige ondersteuning: Cancer Center Amsterdam

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

Hypothesis 1: glioma growth and peritumor oscillatory activity
Hypothesis 2: (peritumor) oscillatory activity and NLGN3 expression

Toelichting onderzoek

Achtergrond van het onderzoek

Glioma is a devastating and lethal type of cancer, which has proven difficult to grasp mechanistically and impossible to treat up to now. Most neuro-oncological research into biomarkers and treatment targets focuses on properties of the glioma itself, to no avail. Recent animal studies showed that glioma growth may be determined by the activity of the surrounding tissue. Higher activity of neurons surrounding a glioma in an animal model causes an acceleration of glioma growth through increased neuroligin-3 (NLGN3) expression. In the current study we evaluate two hypotheses: 1) higher oscillatory activity relates to faster subsequent glioma growth and 2) lower global oscillatory activity of the electroencephalography (EEG), besides magnetoencephalography (MEG), also reflects lower NLGN3 expression of the resected tumor tissue. The first hypothesis will be evaluated in retrospective data of ~50 histopathologically confirmed glioma patients. Tumor growth will be quantified as the difference in tumor size on T1 MRI scans acquired around the MEG recording (t0) and clinical follow up (t1). In grade II and III glioma, this clinical follow up is usually six months, while glioblastoma patients undergo radiological assessment every three months. Peritumor oscillatory activity will be extracted from the MEG using the Automated Anatomical Labeling (AAL) atlas and calculated as broadband power (0.5-48 Hz). To evaluate the second hypothesis, 35 patients with glioma will be included and MEG/EEG registration will be performed within 4-8 weeks after (re)resection. Oscillatory activity will be determined as peritumor (as previously described) and global broadband power. Tissue from each resection will be requested from the pathology department and NLGN3 expression will be semi-quantitatively categorized as low, moderate or high NLGN3 expression after treatment with the primary antibody (mouse monoclonal, ab186307, Abcam, Cambridge, UK) against NLGN3. To test our second hypothesis regression analysis with EEG global oscillatory activity as the dependent variable and NLGN3 expression as the independent variable will be performed, including tumor grade, molecular subtype (if available), presence of epilepsy, and tumor volume at t0 as covariates. The results of the current study can be the first step a larger, international study to evaluate the sensitivity and specificity of oscillatory activity as a biomarker for progression of glioma.

Doel van het onderzoek

1) higher oscillatory activity relates to faster subsequent glioma growth and 2) lower global oscillatory activity of the EEG also reflects lower NLGN3 expression of the resected tumor tissue

Onderzoeksopzet

MEG/EEG recording will be performed 4-8 weeks after (re)resection

Onderzoeksproduct en/of interventie

Not applicable

Contactpersonen

Publiek

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Wetenschappelijk

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

Adults (≥ 18 years), glioma confirmed on radiological assessment and/or histopathology

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

Psychiatric disease or symptoms, other comorbidities of the central nervous system (particularly cerebrovascular accidents, multiple sclerosis, Alzheimer’s disease), insufficient mastery of the Dutch language, inability to communicate adequately

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Anders
Toewijzing:	N.v.t. / één studie arm
Blindering:	Open / niet geblindeerd
Controle:	N.v.t. / onbekend

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	03-06-2019
Aantal proefpersonen:	35
Type:	Verwachte startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Ja

Toelichting
Fully anonymized primary outcome measures will be shared upon request.

Ethische beoordeling

Positief advies

Datum:	03-06-2019
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 55895
Bron: ToetsingOnline
Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL7769
CCMO	NL49485.029.14
OMON	NL-OMON55895

Resultaten