Meningitis sequelae in Adulthood: Towards and Understanding of Residual Effects after childhood bacterial infection

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Ethical review	Approved WMO
Status	Recruiting
Health condition type	Bacterial infectious disorders
Study type	Observational non invasive

Summary

ID

NL-OMON56904

Source
ToetsingOnline

Brief title
MATURE

Condition

- Bacterial infectious disorders

Synonym
infection of the meninges, Meningitis

Research involving
Human

Sponsors and support

Primary sponsor: Amsterdam UMC
Source(s) of monetary or material Support: GlaxoSmithKline,GlaxoSmithKline (GSK);Vaillant Stichting

Intervention

Keyword: Adult, Bacterial, Meningitis, Prediction, Sequelae

Outcome measures

Primary outcome

Main study parameters will be 1) neurocognitive outcome as measured by the Emma Toolbox (an in-depth measure of neurocognitive functioning that was developed in-house) and a short form of the Wechsler Adult Intelligence Scale IV (WAIS-IV) estimating Full Scale IQ, 2) behavioral and emotional functioning as measured by the Adult Self Report (ASR) and Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5), 3) Health related quality of life as measured by the Patient Reported Outcomes Measurement Information System (PROMIS) 29+2 Profile and the EuroQoL EQ-5D-5L, 4) Participation in society as measured by the PROMIS Ability to Participate in Social Roles and Activities (PROMIS APS) short form 8a and a custom participation questionnaire, and 5) hearing as measured by the Amsterdam Inventory for Auditory Disability and Handicap (AIADH).

Secondary outcome

Secondary study parameters will be brain structure and functioning (MRI scanning)

Study description

Background summary

Bacterial meningitis (BM) is a life-threatening infection of the central nervous system. The global burden of meningitis remains high in all age groups

and progress as a result of efforts to reduce this burden lags substantially behind progress reached in other vaccine preventable diseases. In children, BM can cause a wide range of sequelae that persist throughout childhood. The long-term effects of childhood BM on functioning in adulthood remains largely unknown. The importance of research into the effects of childhood BM in adult age is evident, especially given that earlier findings have revealed that a substantial proportion of survivors subjectively report impaired functional outcome in early adult life. Additionally, the presence and type of consequences of childhood BM can vary largely between children. Prediction of protective and risk factors for very long-term sequelae would therefore be very useful in clinical practice. In this regard, current prediction models are insufficient due to the focus on mortality, lack of other relevant outcome domains, relatively short follow-up period and/or use of conventional statistical methods with limited flexibility to model complex relationships.

Study objective

The project will aim to quantify very long-term sequelae after childhood BM (~31 years after infection) on a wide range of functional outcome domains: neurocognitive functioning, behavioral and emotional functioning, health related quality of life, participation in society, hearing, and brain structure and function. Additionally, the project aims to investigate the neural mechanisms underlying functional outcome, and to develop innovative prognostic prediction models for very long-term outcome after childhood bacterial meningitis.

Study design

This study is a prospective longitudinal observational follow-up.

Study burden and risks

For all participants, assessment includes: 1) Assessment of neurocognitive functioning using the Emma Toolbox and a short form of the WAIS-IV. The Emma Toolbox will be administered on a 15-inch laptop from a 50 cm viewing distance and has a duration of 65 min. A short form of the WAIS-IV (consisting of the subtests Vocabulary, Similarities, Matrix Rea-soning and Block Design) will be used to estimate Full-scale IQ (FSIQ). Administration takes approximately 35 minutes. 2) Questionnaires assessing demographic and clinical characteristics (custom general questionnaire), behavioral and emotional functioning (ASR, PCL-5), health related quality of life (PROMIS 29+2 Profile, EQ-5D-5L), participation in society (PROMIS APS short form 8a and a custom participation questionnaire), and hearing (AIADH). Questionnaires will be administered digitally for all participants. Time to complete all questionnaires is estimated to be around 45 minutes. Additionally, a subsample of 64 survivors of childhood meningitis (32 meningococcal meningitis survivors and 32 pneumococcal

meningitis survivors) and 64 controls will undergo the optional assessment of brain structure and functioning using Magnetic Resonance Imaging (MRI) at the on-campus Spinoza Centre for Neuroimaging. Estimated duration of MRI assessment is 60 minutes.
Participants can complete all two or three assessments during one single hospital visit. Based on planning restrictions or the participant*s preference, a separate visit may be planned for the MRI scan. An additional 10 minutes will be taken into account for the purpose of introducing participants to the study and obtaining written informed consent. Altogether, total duration of the study visit will be maximum 3.0 hours without MRI assessment, and maximum 4.0 hours with MRI assessment.
Participation is associated with negligible risk, because no negative (side) effects are known of the neuropsychological testing, questionnaires, and MRI scanning used in the study. Financial burden due to travel and parking expenses will be compensated, including costs for public transportation, at a rate of ¤0.23 per kilometer travelled. Additionally, participants receive a gift voucher worth ¤25 for participation.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)

Inclusion criteria

Childhood bacterial meningitis survivors:
1. History of childhood bacterial meningitis;
2. 18 years of age or older;
3. Fluent Dutch speaker.

Control group:
1. 21 years of age or older;
2. Fluent Dutch speaker;
3. No documented diagnosis of a neurological disorder (among which meningitis).

Exclusion criteria

1. Absence or withdrawal of written informed consent;
2. *Complex onset* of meningitis, defined as: meningitis secondary to immunodeficiency states, central nervous system surgery, cranial trauma or cerebrospinal fluid shunt infections or relapsing meningitis;
3. Somatic disorders unrelated to meningitis, congenital disorders, and severe motor or sensory disabilities that interfere with outcome assessment at time of assessment;
4. Inability to comprehend testing instructions at time of assessment.

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)

Primary purpose: Basic science

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	13-09-2024
Enrollment:	184
Type:	Actual

Medical products/devices used

Registration:	No

Ethics review

Approved WMO

Date:	24-07-2024
Application type:	First submission
Review commission:	METC Amsterdam UMC

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	NL85647.018.24