ISRCTN19922220 https://doi.org/10.1186/ISRCTN19922220

Endovascular treatment of acute ischemic stroke in the Netherlands for late arrivals

Submission date
21/09/2017

Recruitment status
No longer recruiting

Registration date
11/12/2017

Overall study status
Completed

Last Edited
07/05/2025

Condition category
Circulatory System

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Ischaemic strokes occur when a blood clot blocks the flow of blood and oxygen to the brain. They occur about 20,000 times a year in the Netherlands. Since the mid-nineties, ischemic stroke has been treated with clot-dissolving medication (thrombolytics) within 4.5 hours after symptoms start. This treatment has a moderate effect on clinical improvement. A new, promising treatment option and important subject of research in the past 10 years is endovascular treatment (EVT). This involves removing the clot using a small tube (catheter). This method has been proved to be safe and effective if performed within 6 hours after the start of symptoms. However, many patients with ischemic stroke (up to 25%) arrive in the hospital after this 6 hour time-window. The aim of this study is to determine the safety and effectiveness of EVT between 6 and 24 hours after the start of symptoms.

Who can participate?
Patients aged 18 or older with acute ischemic stroke

What does the study involve?
Participants are randomly allocated to be treated with EVT or the best medical treatment. Every participant undergoes a scan of the brain blood vessels to assess the restoration of blood flow 24 hours later, and a brain scan to assess final infarct (dead tissue) volume 5-7 days later. Three months later all participants are interviewed by telephone to assess their functional outcome.

What are the possible benefits and risks of participating?
EVT may improve functional outcome when applied 6 to 24 hours after the start of symptoms. Based on previous studies, few complications are expected.

Where is the study run from?
1. Maastricht University Medical Center (Netherlands)
2. Academic Medical Center (Netherlands)
3. Erasmus Medical Center (Netherlands)
4. University Medical Center Utrecht (Netherlands)

When is the study starting and how long is it expected to run for?
May 2017 to November 2022

Who is funding the study?
Dutch Heart Foundation (Netherlands)

Who is the main contact?
Robert-Jan Goldhoorn

Contact information

Type(s)
Scientific

Contact name
Mr Robert-Jan Goldhoorn

Contact details
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Netherlands
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Additional identifiers

Protocol serial number
NL58246.078.17

Study information

Scientific Title
Multicenter randomised clinical trial of endovascular treatment of acute ischemic stroke in the Netherlands for late arrivals

Acronym
MR CLEAN-LATE

Study objectives
Endovascular treatment for acute ischemic stroke due to an intracranial large vessel occlusion of the anterior circulation is effective for patients treated between 6 and 24 hours after symptom onset or last seen well less than 24 hours, after selection based on collateral flow.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Medisch Ethische Toetsings Commissie Erasmus MC (Medical Ethical Committee Erasmus MC), 11 /09/2017, ref: MEC-2017-367

Study design
Multicenter phase III clinical trial with randomized treatment allocation, open label treatment and blinded endpoint evaluation (PROBE design)

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Acute ischemic stroke due to an intracranial large vessel occlusion of the anterior circulation

Interventions
Randomisation: web-based; permuted blocks. Backup by telephone.

The control group will receive best medical management. The intervention group will receive endovascular treatment (EVT). All patients in the intervention group will be transferred to the angiosuite. The procedure involves arterial catheterization, after which intracranial thrombectomy will be performed with a stent-retriever or other device approved by the steering committee. Every participant will undergo a CTA of the cerebral vessels to assess rate of recanalization 24 hours after randomization, and a brain scan to assess final infarct volume 5-7 days after randomization. Three months after inclusion all participants will be interviewed by telephone to determine functional outcome.

Intervention Type
Procedure/Surgery

Primary outcome(s)
Functional outcome, measured by the modified Rankin Scale (mRS) at 90 days

Key secondary outcome(s))
1. Mortality at 90 days
2. Recanalization on CTA at 24 hours
3. Infarct size on non-contrast head CT (NCCT) at 5-7 days or just before discharge
4. Symptomatic intra-cranial hemorrhage according to the Heidelberg criteria at 24 hours, and 5-7 days after randomization
5. Clinical stroke severity, measured by the National Institutes of Health Stroke Scale score at 24 hours and 5-7 days after randomization

Completion date
01/11/2022

Eligibility

Key inclusion criteria
1. Clinical diagnosis of acute ischemic stroke
2. Caused by proximal intracranial anterior circulation occlusion (distal intracranial carotid artery or middle (M1/M2) cerebral artery confirmed by neuro-imaging (CTA or MRA)
3. Presence of poor*, moderate or good collateral flow as shown by neuroimaging (CTA)

4. CT or MRI ruling out intracranial hemorrhage
5. Start of IA treatment (groin puncture) possible between 6 and 24 hours after symptom onset or last seen well < 24 hours including wake-up strokes
6. A score of at least 2 on the NIH Stroke Scale
7. Age of 18 years or older
*Inclusion and randomization will be restricted to patients with moderate or good collaterals when 100 patients with poor collaterals have been included in the study

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Total final enrolment
535

Key exclusion criteria
1. Pre-stroke disability which interferes with the assessment of functional outcome at 90 days, i. e. mRS >2
2. Cerebral infarction in the previous 6 weeks with residual neurological deficit or signs of large recent infarction on neuroimaging in the territory of the middle cerebral antery
3. Clinical evidence of hemorrhagic diathesis, confirmed by an INR > 3 and/or a platelet count < 40 x 109/L and/or an APTT > 50 sec
4. Clearly demarcated hypodensity in >1/3 of the middle cerebral artery territory, consistent with current symptoms
5. Participation in trials other than current and MR ASAP

Date of first enrolment
01/11/2017

Date of final enrolment
01/11/2021

Locations

Countries of recruitment
Netherlands

Study participating centre

Maastricht University Medical Center
Maastricht
Netherlands
6202 AZ

Study participating centre
Academic Medical Center
Amsterdam
Netherlands
1005 AZ

Study participating centre
Erasmus Medical Center
Rotterdam
Netherlands
3000 CA

Study participating centre
University Medical Center Utrecht
Utrecht
Netherlands
3508 GA

Sponsor information

Organisation
Maastricht University Medical Center

ROR
https://ror.org/02d9ce178

Funder(s)

Funder type
Charity

Funder Name
Hartstichting

Alternative Name(s)
Heart Foundation

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
Netherlands

Results and Publications

Individual participant data (IPD) sharing plan
The data sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		29/03/2023	03/04/2023	Yes	No
Results article	2-year follow-up	25/06/2024	25/06/2024	Yes	No
Protocol article	protocol	07/01/2020	16/02/2021	Yes	No
Protocol article	protocol	24/02/2021	26/02/2021	Yes	No
Other publications	post hoc secondary analysis of CTP parameters association of EVT with functional outcomes among patients in the late window after ischemic stroke selected based on collateral flow	05/05/2025	07/05/2025	Yes	No