

A phase III, randomized, open-label, 500-subject clinical trial of minimally invasive surgery plus rtPA in the treatment of intracerebral haemorrhage

Submission date 08/08/2014	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 08/08/2014	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
Last Edited 26/03/2019	Condition category Surgery	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

This study will determine whether a drug named recombinant tissue plasminogen activator (rtPA) improves recovery in patients with blood clots in the brain when given by minimally invasive surgery, compared to standard medical management. This study is necessary because although rtPA has been approved for certain uses in humans, it is not yet approved for dissolving blood clots in the brain. The study premise is that removing the blood clot faster will reduce injury to the brain and improve the patient's long-term prognosis.

Who can participate?

This study is for people with intracerebral haemorrhage (bleeding in the brain).

What does the study involve?

Initial investigations will include a medical history, physical examination, blood and urine tests, tests of neurological condition, and CT scans. Patients will have a CTA or MRI scan to rule out other underlying conditions. Eligible patients or their consultee will be asked to sign a consent form and the patient will then be randomly assigned (like flipping a coin) to one of two groups. Patients in the rtPA group will have a small hole made in the skull, as much blood as can be easily removed will be taken out, and a catheter (tube) inserted into the blood clot. The drug will be given via the catheter three times a day for up to 3 days. Patients in the other group will have the standard medical care. All patients will be monitored closely for 6 days including daily CT scans of the head to check for any bleeding. Patients will return to clinic after 1, 6 and 12 months for neurological examinations with CT scans at 1 and 6 months. These visits will take about 2 hours and one assessment will be video recorded. At 3 and 9 months patients will receive telephone follow-ups that will take about 30 minutes.

What are the possible benefits and risks of participating?

Not provided at time of registration.

Where is the study run from?

This international study is coordinated from John Hopkins University (USA). In the UK the study sites are: Newcastle upon Tyne Hospitals NHS Foundation Trust, Southampton University Hospitals NHS Trust, Salford Royal NHS Foundation Trust, Imperial College Healthcare NHS Trust, King's College Hospital NHS Foundation Trust, Cambridge University Hospital NHS Foundation Trust.

When is the study starting and how long is it expected to run for?

From December 2013 to November 2018.

Who is funding the study?

National Institutes of Health (NIH) (USA).

Who is the main contact?

Dr Barbara Gregson

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Contact information

Type(s)

Scientific

Contact name

Dr Barbara Gregson

Contact details

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Additional identifiers

Clinical Trials Information System (CTIS)

2013-002818-12

ClinicalTrials.gov (NCT)

NCT01827046

Protocol serial number

ICH02

Study information

Scientific Title

A phase III, randomized, open-label, 500-subject clinical trial of minimally invasive surgery plus rtPA in the treatment of intracerebral haemorrhage

Acronym

Minimally Invasive Surgery plus rT-PA for ICH Evacuation (MISTIE III)

Study objectives

Minimally invasive surgery (MIS) plus recombinant tissue plasminogen activator (rtPA) for three days improves functional outcome by a 12% increase in the modified Rankin Scale (mRS) score 0-3 compared to medically treated subjects at 180 days.

More details can be found here: <http://public.ukcrn.org.uk/Search/StudyDetail.aspx?StudyID=17175>

Ethics approval required

Old ethics approval format

Ethics approval(s)

USA: Office of Human Subjects Research Institutional Review Boards, Johns Hopkins Medicine, 21/11/2013, ref:NA00080619/CIR00004252

UK: Berkshire NRES Committee – South Central, 25/07/2014, ref: 14/SC/0228

Spain: Comité Ético De Investigación Clínica, Hospital Universitario Río Hortega, Valladolid, 31/07/2014

Hungary: Regionális És Intézményi Humán Orvosbiológiai Kutatásetikai Bizottsága, University of Szeged, 04/11/2014, ref: 105/2014

All other centres will seek ethics approval before recruiting participants.

Study design

Randomised; Interventional; Design type: Treatment

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Topic: Stroke; Subtopic: Acute Care; Disease: Drug type, Surgery used, In hospital study

Interventions

Suitable patients who fulfil all the inclusion criteria including consent will be randomised to receive either an operation to insert a catheter into the clot in the brain and receive up to nine doses of drug over a three-day period, or to receive medical treatment alone. Patients are followed up at 30, 90, 180, 270 and 365 days. At 30, 180 and 365 days they will be invited to clinic for a follow-up CT and assessments and at 90 and 270 days the assessments will be done by phone.

Intervention Type

Drug

Phase

Phase III

Drug/device/biological/vaccine name(s)

Recombinant tissue plasminogen activator

Primary outcome(s)

Modified rankin; Timepoint(s): 180 days

Key secondary outcome(s)

Not provided at time of registration

Completion date

30/11/2018

Eligibility**Key inclusion criteria**

1. Spontaneous supratentorial ICH = 30 mL diagnosed using radiographic imaging (CT, CTA, etc.), with a GCS = 14 or a NIHSS = 6. Six-hour clot size equal to the most previous clot size (within 5 mL) as determined by additional CT scans at least 6 hours apart using the ABC/2 method.
2. Symptoms less than 24 hours prior to diagnostic CT (dCT) scan (an unknown time of onset is exclusionary).
3. Intention to initiate surgery between 12 and 72 hours after dCT. First dose can be given within 76 hours after dCT (delays for post surgical stabilization of catheter bleeding or because of unanticipated surgical delay are acceptable with approved waiver from the CCC).
4. SBP < 180 mmHg sustained for six hours recorded closest to the time of randomization.
5. Historical Rankin score of 0 or 1.
6. Age = 18 and = 80.

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Sex

All

Key exclusion criteria

1. Infratentorial hemorrhage. Intraventricular hemorrhage requiring treatment with extraventricular drainage (obstruction of third and fourth ventricles). Thalamic bleeds with apparent midbrain extension with third nerve palsy or dilated and nonreactive pupils. Other (supranuclear) gaze abnormalities are not exclusions. Note: Patients with a posterior fossa ICH

or cerebellar hematomas are ineligible. Irreversible impaired brain stem function (bilateral fixed, dilated pupils and extensor motor posturing), GCS = 4. Ruptured aneurysm, arteriovenous malformation (AVM), vascular anomaly, Moyamoya disease diagnosed with radiographic imaging. Patients with unstable mass or evolving intracranial compartment syndrome.

2. Platelet count < 100,000, INR > 1.4, or an elevated prothrombin time (PT) or activated partial thromboplastin time (aPTT). Any irreversible coagulopathy or known clotting disorder. Inability to sustain INR = 1.4 using short and long acting procoagulants (such as but not limited to NovoSeven, FFP, and/or vitamin K). Subjects requiring long-term anticoagulation are excluded. Reversal of anticoagulation is permitted for medically stable patients who can realistically tolerate the short term risk of reversal. Patient must not require Coumadin (anticoagulation) during the first 30 days, and normalized coagulation parameters must be demonstrated, monitored closely and maintained during the period of brain instrumentation. Use of Dabigatran prior to symptom onset.

3. Internal bleeding, involving retroperitoneal sites, or the gastrointestinal, genitourinary, or respiratory tracts.

4. Superficial or surface bleeding, observed mainly at vascular puncture and access sites (e.g., venous cutdowns, arterial punctures, etc.) or site of recent surgical intervention.

5. Positive urine or serum pregnancy test in premenopausal female subjects without a documented history of surgical sterilization.

6. Allergy/sensitivity to rtPA. Prior enrollment in the study. Planned or simultaneous participation (between screening and Day30) in another interventional medical investigation or clinical trial. Patients in observational, natural history, and/or epidemiological studies not involving an intervention are eligible.

7. Subjects who are not expected to survive to the day 365 visit due to comorbidities and/or are DNR/DNI status prior to randomization are excluded. Any concurrent serious illness that would interfere with the safety assessments including hepatic, renal, gastroenterologic, respiratory, cardiovascular, endocrinologic, immunologic, and hematologic disease. Patients with a mechanical heart valve. Known risk for embolization, including history of left heart thrombus, mitral stenosis with atrial fibrillation, acute pericarditis, or subacute bacterial endocarditis. Any other condition that the investigator believes would pose a significant hazard to the subject if the investigational therapy were initiated.

8. Active drug or alcohol use or dependence that, in the opinion of the site investigator, would interfere with adherence to study requirements.

9. In the investigator's opinion, the patient is unstable and would benefit from a specific intervention rather than supportive care plus or minus MIS+rtPA removal of the ICH.

10. Inability or unwillingness of subject or legal guardian/representative to give written informed consent.

Date of first enrolment

01/12/2013

Date of final enrolment

30/11/2018

Locations

Countries of recruitment

United Kingdom

England

Australia

Canada

China

Germany

Hungary

Israel

Spain

United States of America

Study participating centre

Wolfson Research Centre

Neurosurgical Trials Unit

3-4 Claremont Terrace

Newcastle upon Tyne

United Kingdom

NE2 4AE

Study participating centre

70+ other centres

United Kingdom

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Sponsor information

Organisation

Johns Hopkins University

ROR

<https://ror.org/00za53h95>

Funder(s)

Funder type

Government

Funder Name

National Institutes of Health (NIH); Grant Codes: 1U01NS080824-01A1

Alternative Name(s)

US National Institutes of Health, Institutos Nacionales de la Salud, NIH, USNIH

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

United States of America

Results and Publications

Individual participant data (IPD) sharing plan**IPD sharing plan summary****Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	09/03/2019		Yes	No
Results article	results	01/06/2019		Yes	No
HRA research summary			28/06/2023	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes