Validation a zero dimensional model for assessing the hemodynamics in the circle of Willis with TCD

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON21772

Source
NTR

Health condition

aneurysmal subarachnoid haemorrhage

Sponsors and support

Primary sponsor: UMCG
Source(s) of monetary or material Support: China Scholarship Council

Intervention

Outcome measures

Primary outcome

The agreement between flow velocities of the model and flow velocities measured by TCD (gold standard)

Secondary outcome

none

Study description

Background summary

We developed a zero-dimensional model to assess the hemodynamics in the circle of Willis. The simulation model has been compared with other published one-dimensional models and showed a good agreement. However, those numerical models have only validated with data from healthy volunteerrs at the level of ICA and MCA by MRA or TCD. We will collect data from a previously performed prospective study, that involved aneurysmal subarachnoid haemorrhage (aSAH) patients receiving TCD and brain CTA with in the same day. We assumed that the diameter of arteries in the circle of Wills remain the same within 24 hours even in patient during a progressive vasospasm. We will measure the diameter of each segment in the circle of Willis, and use it as input of our model to simulate the flow velocity of each segment. Then we compare those flow velocities with that measured by TCD, to check if our model can simulate the flow velocity in the circle of Willis for individual. This is a diagnostic accuracy study.

Study objective

the zero-dimensional model is a reliable tool to predict the flow velocities in the circle of Willis .

Study design

finish case selection in two months, measure the diameter of each circle of Willis from CTA in 3 months, then analysis data and write the report.

Contacts

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Eligibility criteria

Inclusion criteria

patient who received both TCD and CTA within 24 hours

Exclusion criteria

the image of CTA is not qualified for diameter measurement

Study design

Design

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

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-02-2019
Enrollment:	59
Type:	Anticipated

IPD sharing statement

Plan to share IPD: No

Ethics review

Positive opinion

Date:	25-10-2019
Application type:	First submission

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	NL8114
Other	METC(UMCG) : METc 2019/103

Study results