Association between the Edinburgh CT and genetic diagnostic criteria for lobar ICH associated with cerebral amyloid angiopathy and risk of recurrent ICH

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Background & Aims

- Lobar intracerebral haemorrhage (ICH) associated with cerebral amyloid angiopathy (CAA) seems to have a higher risk of recurrent ICH
- The Edinburgh diagnostic criteria based on CT $\pm$ APOE genotype are accurate for diagnosing pathologically-proven CAA-associated lobar ICH
- Whether they are associated with a higher risk of recurrent ICH risk in survivors of lobar ICH is unknown

Methods

- We conducted a 3-year, population-based, prospective inception cohort study using multiple overlapping sources of case ascertainment of ICH in 2010 to 2013 in Lothian, Scotland
- During this study, and until 2017, we recruited adults with ICH who consented to APOE genotyping
- A radiologist rated brain CT appearances masked to clinical, genetic and histopathological features
- Follow up (>96% completeness) used multiple overlapping sources, and was censored at 5 years
- A neurologist validated recurrent ICH diagnoses and deaths using clinical and imaging records
- We estimated cumulative incidence & performed multivariable analysis of 1st recurrent ICH in participants with 1st-ever lobar ICH surviving at least 30 days, stratified by CT-only and CT & APOE Edinburgh criteria (low vs intermediate/high), treating death as a competing risk

Results

- Among 120 with lobar ICH in the CT-only study, the recurrent ICH rate in low risk CAA was 3.0 ([95%CI 0.9-7.1], n=42) per 100 patient years versus 8.8 ([95%CI 5.4-13.6], n=78) for intermediate/high risk CAA
- Among 92 with lobar ICH in the CT & APOE study, the recurrent ICH rate in low risk CAA was 3.2 ([95%CI 0.5-9.8], n=23) per 100 patient years versus 8.2 ([95%CI 4.6-13.3], n=69) for intermediate/high risk CAA

Conclusions & future plans

After lobar ICH, recurrent ICH risk appears higher among patients with intermediate/high probability of CAA according to the Edinburgh criteria

Cumulative rates of 1st recurrent ICH after lobar ICH according to Edinburgh criteria

CT only Edinburgh criteria

CT & APOE Edinburgh criteria

Multivariable competing risk analyses for 1st recurrent ICH according to Edinburgh criteria

	Subhazard ratio (95% CI)	p value
Intermediate/high risk CAA (CT-only)	2.79 (0.96-8.11)	0.06
Age per 10 year increase	0.87 (0.66-1.15)	0.33
Intermediate/high risk CAA (CT & APOE)	1.94 (0.64-5.94)	0.24
Age per 10 year increase	0.98 (0.74-1.29)	0.86

Study flowcharts

Population-based CT-only Edinburgh criteria study

Community-based CT & APOE Edinburgh criteria study