

Correction Factor for Each MRI Sequence in Volumetric Analysis of ICH when Evaluating Hematoma Expansion for Patients who Undergo Baseline CT and Followup MRI

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Background

- Measuring ICH volume for hematoma expansion is required for evaluating potential hemostatic and coagulation reversal treatments
- CT is the primary acute imaging modality but MRI is preferred for finer details and ICH etiology at follow-up
- Given MRI blooming artifacts and various sequences, a correction factor may be needed when comparing baseline CT and followup MRI ICH volumes

Aim

- To establish correction factors for each MRI sequence that is equivalent to CT volumes

Methods

- Single centre, retrospective, cohort study was used to identify patients with ICH who had a followup CT and MRI within a 12-72 hour period after baseline imaging
- Quantomo software (Cybertrials, Inc) was used to measure hemorrhage volume for both followup imaging modalities
- Linear regression was used to generate a correction factor for each MRI sequence compared to CT

Results

- 22 patients were included with a median 2.7 hours, IQR (-5.9, 20.1) between followup CT and MRI
- Hematomas were confirmed stable by followup imaging in all included subjects

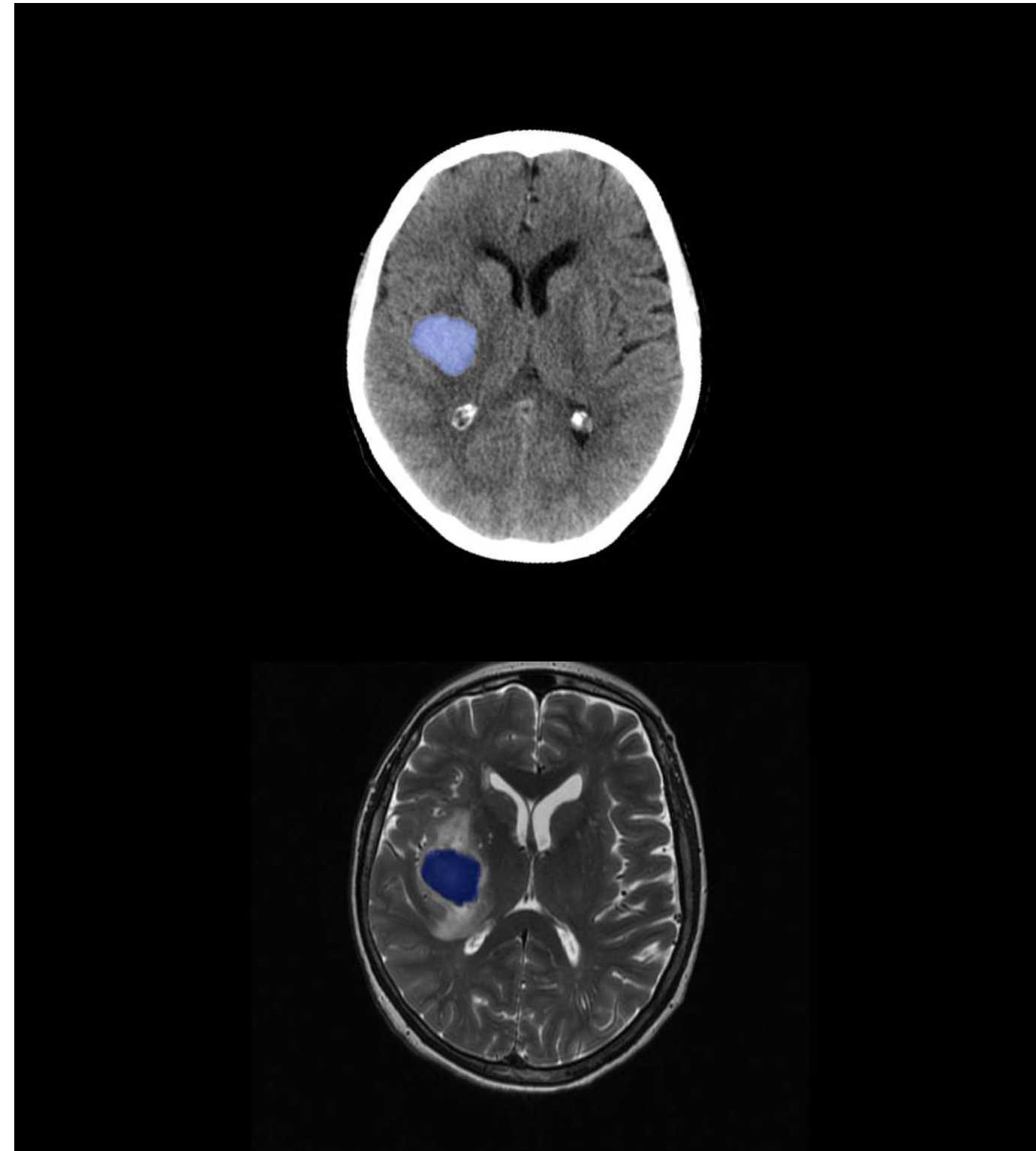


Figure 1: Followup CT and followup T2 MRI volume measurement comparison (Cybertrials, Inc).

Conclusion

- Preferred MRI sequences for a post-ICH followup MRI protocol are T2 or FLAIR since they closely match CT ICH volumes
- Followup CT is not necessary in RCTs requiring volumetric ICH analysis if MRI is performed

MR Sequence	n	Correction factor to estimate CT volume equivalent	95% CI
FLAIR	19	1.06	0.94 – 1.17
T2	14	0.99	0.85 – 1.12
GRE	7	0.81	0.73 – 0.9
DWI	19	0.79	0.66 – 0.92
SWI	10	0.76	0.72 – 0.8

Figure 2: Correction factor for each MR sequence.