Hematoma Expansion in Intracerebral Hemorrhage with Unclear Onset

Hematoma expansion (HE) in patients with acute intracerebral hemorrhage (ICH) is known to increase the likelihood of death and functional dependence. Current practices of managing HE are mainly derived from studies on ICH cases with clear symptom onset (CSO).

Study question
What is the prevalence, predictors, and impact of HE in ICH cases with unclear symptom onset (USO)?

Outcome measures
- HE
- Mortality at 30 days
- Predictors of HE and mortality

HE is common in ICH cases with USO, and independently associated with mortality.

HE associated with mortality in USO
- Development cohort (DC), odds ratio (OR) = 2.59
  (95% CI 1.27–5.28, p = 0.009)
- Replication cohort (RC), OR = 2.43
  (95% CI 1.42–4.17, p = 0.001)

Predictors of HE
- DC: OR = 2.59
- RC: OR = 3.46
  (95% CI 1.86–6.44, p < 0.001)

Similar frequency of HE in patients with USO and CSO
- USO: 25%
- CSO: 21.9%

Hypodensities on noncontrast CT were an independent predictor of HE

DC, odds ratio (OR) = 2.64
(95% CI 1.43–4.89, p = 0.002)

RC, OR = 3.46
(95% CI 1.86–6.44, p < 0.001)

Outcome measures
- Development cohort (DC): N = 1,022
- Replication cohort (RC): N = 1,143

ICH with USO
- (n = 352)
- (n = 407)

ICH with USO
- (n = 21.9%)
- (n = 31.5%)

Multivariable logistic regression

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