Associations of Multimorbidity with Stroke Severity, Subtype, Premorbid Disability, and Early Mortality

Patients with multimorbidity are underrepresented in randomized clinical trials (RCTs) for stroke

This is partly because multimorbidity is associated with increased mortality and poor patient outcomes after stroke

Is the association between multimorbidity and early stroke mortality driven by potential confounding factors?


Patients who had a first-in-study stroke (N = 2,492)

Assessments by study physicians following the stroke

Postacute severity (≈24 hours; NIH Stroke Scale-NIHSS)

Stroke subtype (hemorrhagic vs ischemic; classified by the TOAST system)

Premorbid disability (modified Rankin score/mRS ≥2)

90-day mortality

Of all patients who participated in the study:

86.7%

Had ischemic strokes (vs hemorrhagic strokes) (n = 2,160)

56.2%

Had at least one CCI comorbidity (n = 1,402)

28.1%

Had multimorbidity (n = 700)

Most common comorbidities

Cancer (13.8%)

Myocardial infarction (11.5%)

Diabetes without end-organ damage (11.4%)

Associations between prestroke multimorbidity and confounding factors

Premorbid disability (age-,sex-adjusted OR = 1.42, 1.31–1.54, p < 0.001)

Strong association

Intracerebral hemorrhage (adjusted OR vs ischemic stroke = 0.80, 0.70–0.92, p < 0.001)

Negative association

Severity of ischemic stroke (OR: For NIHSS 5–9: 1.12, 1.01–1.23, p = 0.027; for NIHSS ≥10: 1.15, 1.06–1.26, p = 0.001)

Crude association

90-day mortality (age-, sex-, stroke severity-, and premorbid disability-adjusted HR = 1.09, 1.04–1.14, p < 0.001)

Weak association

Multimorbidity

No association after stratification by the TOAST subtype

Odds ratio (OR)

Hazard ratio (HR)

Trial of ORG 10172 in Acute Stroke Treatment (TOAST)

Multimorbidity is strongly associated with premorbid disability but is not independently associated with increased ischemic stroke severity

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