Duration of Heightened Stroke Risk after Acute Myocardial Infarction

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Duration of Heightened Stroke Risk after MI

• Disclosures:
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Duration of Heightened Stroke Risk after MI

- Acute MI is considered an etiological cause of stroke when it occurs within 1 month of stroke
  - TOAST / ESUS: MI is cause of stroke only when it occurs within 1 month of stroke
- RE-SPECT ESUS / ARCADIA

**TABLE 3. TOAST Classification of High- and Medium-Risk Sources of Cardioembolism**

- High-risk sources
  - Mechanical prosthetic valve
  - Mitral stenosis with atrial fibrillation
  - Atrial fibrillation (other than lone atrial fibrillation)
  - Left atrial/atrial appendage thrombus
  - Sick sinus syndrome
  - **Recent myocardial infarction (<4 weeks)**
  - Left ventricular thrombus
  - Dilated cardiomyopathy
  - Akinetic left ventricular segment
  - Atrial myxoma
  - Infective endocarditis

**Panel 2: Criteria for diagnosis of embolic stroke of undetermined source**

- Stroke detected by CT or MRI that is not lacunar†
- Absence of extracranial or intracranial atherosclerosis causing ≥50% luminal stenosis in arteries supplying the area of ischaemia
- No major-risk cardioembolic source of embolism‡
- No other specific cause of stroke identified (eg, arteritis, dissection, migraine/vasospasm, drug misuse)

*Requires minimum diagnostic assessment (panel 3). Lacunar defined as a subcortical infarct smaller than or equal to 1.5 cm (<2.0 cm on MRI diffusion images) in largest dimension, including on MRI diffusion-weighted images, and in the distribution of the small, penetrating cerebral arteries; visualisation by CT usually needs delayed imaging greater than 24-48 h after stroke onset. Permanent or paroxysmal atrial fibrillation, sustained atrial flutter, intracardiac thrombus, prosthetic cardiac valve, atrial myxoma or other cardiac tumours, mitral stenosis, recent (<4 weeks) myocardial infarction, left ventricular ejection fraction less than 30%, valvular vegetations, or infective endocarditis.

Objective:
Determine magnitude and duration of heightened stroke risk after acute MI
Duration of Heightened Stroke Risk after MI

• Hypothesis: acute MI would be independently associated with a heightened risk of ischemic stroke beyond the 1-month window that is currently considered as the at-risk period.
Duration of Heightened Stroke Risk after MI

• Methods:
  – Retrospective cohort study of inpatient and outpatient claims data on a 5% sample of Medicare beneficiaries
  – Only included patients >65 years of age
  – Predictor variable: acute MI
  – Primary outcome: ischemic stroke
    • both defined by well-validated ICD-9-CM codes.
  – Excluded ischemic stroke prior to/within hospitalization for acute MI
    • To exclude strokes due to PCI/CABG
  – Adjusted for demographics, stroke risk factors, Charlson comorbidities
  – Sensitivity analysis censoring patients who underwent PCI/CABG after hospitalization for MI

Duration of Heightened Stroke Risk after MI

• Statistics:
  – Survival statistics were used to calculate incidence rates
  – Kaplan-Meier statistics used to calculate cumulative rates
  – Fit Cox regression models separately for the groups with and without acute MI
  – Used the corresponding survival probabilities to compute the HR in each 4-week interval after discharge
  – Nonparametric bootstrap function to compute CIs
Duration of Heightened Stroke Risk after MI

• Results:
  – Identified 1,746,476 beneficiaries of which 46,182 were hospitalized for MI
  – Patients with MI were older, male, more stroke risk factors
Duration of Heightened Stroke Risk after MI

• Results:
  – Over a mean follow-up of 4.6 (2.2) years, 80,466 had an acute ischemic stroke
  – Patients with stroke were older, female, more stroke risk factors
Duration of Heightened Stroke Risk after MI

• Results:
  – After adjustment for demographics, stroke risk factors, and Charlson comorbidities:
    • Risk of ischemic stroke was highest in first 4 weeks after discharge from MI hospitalization (HR 2.7; 9% CI, 2.3-3.2)
    • Ischemic stroke risk remained elevated 5-8 weeks after MI (HR 2.0; 95% CI, 1.6-2.4)
    • Ischemic stroke risk remained elevated 9-12 weeks after MI (HR 1.6; 95% CI, 1.3-2.0)
    • Ischemic stroke risk no longer elevated beyond 12 weeks after MI
Duration of Heightened Stroke Risk after MI

- Acute MI is associated with elevated risk of ischemic stroke which extends beyond the 1-month window which is currently considered the at-risk period
- Risk of stroke appears to be elevated for 3 months after acute MI
- Ischemic stroke risk was independent of periprocedural strokes that may have occurred in setting of coronary reperfusion therapies
Duration of Heightened Stroke Risk after MI

• Limitations:
  • Lacked data regarding MI severity/location/angiography
  • Lacked data regarding stroke severity/location/radiology
  • Lacked data regarding antithrombotic medications/adherence
  • Misclassification of MI/stroke events
  • Patients all >65 years of age and had Medicare
Duration of Heightened Stroke Risk after MI

Acute MI is associated with an elevated risk of ischemic stroke which appears to extend beyond the 1-month window that is currently considered as the at-risk period.
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