Recurrent ischemic stroke

Recurrent ischemic stroke (IS) or TIA is frequent with a considerable variation in incidence and mortality across populations. Current data on stroke recurrence and mortality is useful to examine trends, risk factors and treatment effects.

In a study, Khanevski et al., calculated the incidence of recurrent IS or TIA in a hospital-based stroke population in Western Norway, investigated recurrence factors, and estimated the effect of recurrence on all-cause mortality.

This prospective cohort study registered recurrence and mortality among 1872 IS and TIA survivors admitted to the stroke unit at Haukeland University Hospital between July 2007 and December 2013. Recurrence and death until September 1st 2016 were identified by medical chart review. Cumulative incidences of recurrence were estimated with a competing risks Cox model. Multivariate Cox models were used to examine recurrence factors and mortality.

During follow-up, 220 patients had 277 recurrent IS or TIAs. The cumulative recurrence rate was 5.4% at 1 year, 11.3% at 5 years and 14.2% at the end of follow-up. Hypertension (HR=1.65, 95% CI 1.21 - 2.25), prior symptomatic stroke (HR=1.63, 95% CI) 1.18-2.24), chronic infarcts on MRI (HR=1.48, 95% CI 1.10-1.99) and age (HR 1.02 /year, 95% CI 1.00-1.03) were independently associated with recurrence. A total of 668 (35.7%) patients died during follow-up. Recurrence significantly increased the all-cause mortality (HR=2.55, 95% CI 2.04-3.18).

The risk of recurrent IS stroke or TIA was modest in this population and was associated with previously established risk factors. Recurrence more than doubled the all-cause mortality [1)].

Predictors of recurrent ischemic stroke are less well known in patients with a recent ischemic stroke than in patients with transient ischemic attack (TIA).

Kauw et al., identified clinical and radiological factors for predicting recurrent ischemic stroke in patients with recent ischemic stroke.

A systematic search in PubMed, Embase, Cochrane Library, and CINAHL was performed with the terms “ischemic stroke,” “predictors/determinants,” and “recurrence.” Quality assessment of the articles was performed and the level of evidence was graded for the articles included for the meta-analysis. Pooled risk ratios (RR) and heterogeneity (I2) were calculated using inverse variance random effects models.

Ten articles with high-quality results were identified for meta-analysis. Past medical history of stroke or TIA was a predictor of recurrent ischemic stroke (pooled RR 2.5, 95% CI 2.1-3.1). Small vessel strokes were associated with a lower risk of recurrence than large vessel strokes (pooled RR 0.3, 95% CI 0.1-0.7). Patients with stroke of an undetermined cause had a lower risk of recurrence than patients with large artery atherosclerosis (pooled RR 0.5, 95% CI 0.2-1.1). We found no studies using CT or ultrasound for the prediction of recurrent ischemic stroke. The following MRI findings were predictors of recurrent ischemic stroke: multiple lesions (pooled RR 1.7, 95% CI 1.5-2.0), multiple stage lesions (pooled RR 4.1, 95% CI 3.1-5.5), multiple territory lesions (pooled RR 2.9, 95% CI 2.0-4.2), chronic infarcts (pooled RR 1.5, 95% CI 1.2-1.9), and isolated cortical lesions (pooled RR 2.2, 95% CI 1.5-3.2).

In patients with a recent ischemic stroke, a history of stroke or TIA and the subtype large artery atherosclerosis are associated with an increased risk of recurrent ischemic stroke. Predictors evaluated with MRI include multiple ischemic changes and isolated cortical lesions. Predictors of recurrent ischemic stroke concerning CT or ultrasound have not been published [2].

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Khanevski AN, Bjerkreim AT, Novotny V, Naess H, Thomassen L, Logallo N, Kvistad CE; NOR-STROKE study group. Recurrent ischemic stroke: incidence, predictors and impact on mortality. Acta Neurol Scand. 2019 Mar 31. doi: 10.1111/ane.13093. [Epub ahead of print] PubMed PMID: 30929256.
2)
Kauw F, Takx RAP, de Jong HWAM, Velthuis BK, Kappelle LJ, Dankbaar JW. Clinical and Imaging Predictors of Recurrent Ischemic Stroke: A Systematic Review and Meta-Analysis. Cerebrovasc Dis. 2018 Jun 22;45(5-6):279-287. doi: 10.1159/000490422. [Epub ahead of print] Review. PubMed PMID: 29936515.