

Antihyperglycemic Agents Are Inversely Associated With Intracranial Aneurysm Rupture

It has been suggested in previous studies that diabetes mellitus might be protective against intracranial aneurysm rupture, but the strength of this association has been questioned by the lack of detailed data on glycemic control, controlling for risk factors for aneurysmal rupture, and biological plausibility. Thus, Can et al sought to determine whether hemoglobin A1c levels and antihyperglycemic agents were associated with aneurysmal subarachnoid hemorrhage (aSAH). They performed a mixed prospective and retrospective analysis of clinical and radiological data from 4701 patients who were diagnosed with 6411 saccular intracranial aneurysms at 2 academic hospitals. Hemoglobin A1c levels were assessed within 1 year of the diagnosis of ruptured or unruptured intracranial aneurysm. A total of 1302 aneurysms were ruptured. In univariate analysis, use of sulfonylureas only and of combination antihyperglycemic therapies and dipeptidyl peptidase-4 inhibitors was significantly more frequent in patients with unruptured intracranial aneurysms than in patients with aSAH. In multivariate analysis, black, Hispanic, or Asian race, current alcohol use, and current smoking were significantly associated with aSAH, whereas female sex, family history of aneurysms, and antihyperglycemic agent use were inversely associated with aSAH. Hemoglobin A1c values were not significantly associated with aneurysmal rupture. The study was limited by its partly retrospective design, unknown duration of antihyperglycemic medication use, and the timing of hemoglobin A1c measurements. Furthermore, the differential use of certain antihyperglycemics in patients with unruptured intracranial aneurysms could have been key to better understanding the reported findings. These stimulating results will need to be confirmed in future studies of aSAH risk, specifically looking at different antihyperglycemics and their potential protective role in aneurysmal subarachnoid hemorrhage. See p 34.

Early Elevated Troponin Levels After Ischemic Stroke Suggests a Cardioembolic Source

Given the reported association between elevated cardiac troponins and embolic stroke risk, Yaghi et al sought to determine whether early elevated troponin levels after acute ischemic stroke were associated with embolic stroke mechanism, including embolic stroke of undetermined source and cardioembolic stroke, as opposed to noncardioembolic stroke mechanisms. To that end, they prospectively studied 1129 ischemic stroke patients with admission troponin levels within 24 hours of hospital arrival. The mean patient age was 71.6 ± 0.4 years and 54.3% were men. Ischemic stroke subtypes included 40.3% embolic stroke of undetermined source, 33.2% cardioembolic, and 26.5% noncardioembolic (54.0% large-vessel disease, 38.9% small-vessel disease, and 7.1% with another defined mechanism). Ten percent of patients had positive troponins. In univariable analyses, patients with positive troponin were significantly more likely to be older, have hypertension, coronary heart disease, congestive heart

failure, smoking, atrial fibrillation, higher admission stroke severity, larger left atrial diameter, lower ejection fraction, and the presence of wall motion abnormalities compared with the troponin negative/intermediate group. In multivariable models, positive troponin levels were strongly associated with cardioembolic ischemic stroke subtype (adjusted odds ratio, 3.54; 95% confidence interval, 0.97–12.97; $P=0.05$) and embolic stroke of undetermined source (adjusted odds ratio, 2.86; 95% confidence interval, 1.03–7.97; $P=0.044$), independently of age or sex. The study was limited by the lack of serial troponin levels and incomplete echocardiographic data. The authors posit that the association of early troponin elevations in embolic stroke of undetermined source could predict a cardiac source of thromboembolism, implicating a theoretical benefit of anticoagulation in such scenarios. See p 121.

Successful Reperfusion With Intravenous Thrombolysis Preceding Mechanical Thrombectomy in Large-Vessel Occlusions

The efficacy of intravenous systemic thrombolysis with tPA (tissue-type plasminogen activator) in acute ischemic stroke patients with large vessel occlusion (LVO) preceding mechanical thrombectomy (MT) has been questioned in observational studies. However, pretreatment with tPA before MT is recommended in current society guidelines. Given these conflicting views, Tsivgoulis et al aimed to determine the frequency of successful tPA-induced arterial reperfusion in acute ischemic stroke patients with LVO preceding MT. They performed a systematic review and meta-analysis of 7 randomized controlled clinical trials and 6 observational studies, deriving data from 1561 patients with acute ischemic stroke because of LVO. As expected, patients had high stroke severity, with median National Institutes of Health Stroke Scale score of 17. Spontaneous arterial recanalization was reported in the overall studies in 11% (95% confidence interval, 7%–16%). Patients without tandem arterial occlusions were more likely to achieve spontaneous recanalization after tPA (17%; 95% confidence interval, 11%–23%) than those with tandem arterial occlusions (7%; 95% confidence interval, 4%–11%). Unfortunately, analyses based on site of arterial occlusion could not be performed. The analysis was limited by significant heterogeneity across studies, which was felt to be partly because of differential responses to tPA depending on the presence or absence of tandem arterial occlusions and the per-protocol exclusions of patients with recanalization before MT in some studies. Furthermore, the analyses were performed at the study level and not based on individual patient data. Despite all these limitations, these data suggest that MT could be deferred in $\approx 11\%$ of patients with LVO after tPA. An important observation offered by the authors, which merits further studies, is that acute ischemic stroke patients with tandem LVO could potentially be better served by deferring tPA and being referred immediately for MT. This should, however, be considered with caution because tPA preceding MT has been associated with higher successful reperfusion rates after MT. See p 232.

Stroke

JOURNAL OF THE AMERICAN HEART ASSOCIATION



***Stroke*: Highlights of Selected Articles**

Stroke. 2018;49:2

doi: 10.1161/STROKEAHA.117.020123

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Copyright © 2017 American Heart Association, Inc. All rights reserved.

Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://stroke.ahajournals.org/content/49/1/2>

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Stroke* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the [Permissions and Rights Question and Answer](#) document.

Reprints: Information about reprints can be found online at:
<http://www.lww.com/reprints>

Subscriptions: Information about subscribing to *Stroke* is online at:
<http://stroke.ahajournals.org/subscriptions/>