Antithrombotic Treatment After Stroke Because Of Intracerebral Hemorrhage

Luke A. Perry, BSc*; Eivind Berge, PhD*; Joshua Bowditch, BSc(Hons); Elisabeth Forfang, MD; Ole Morten Rønning, PhD; Graeme J. Hankey, MD; Elmer Villanueva, MD; Rustam Al-Shahi Salman, PhD

Many survivors of stroke because of intracerebral hemorrhage (ICH) are at risk of ischemic vascular disease. Antithrombotic (antiplatelet or anticoagulant) treatments may lower the risk of ischemic events after ICH, but they may increase the risks of bleeding.

Objective
To determine the overall effectiveness and safety of antithrombotic drugs for secondary prevention after ICH.

Methods
Search Methods
We searched the Cochrane Stroke Group Trials Register (March 24, 2017), the CENTRAL (Cochrane Central Register of Controlled Trials: the Cochrane Library 2017, Issue 3), Ovid Medline (from 1948 to March 2017), Ovid Embase (from 1980 to March 2017), and online registries of clinical trials (March 8, 2017). We also screened the reference lists of included trials for additional, potentially relevant studies.

Selection Criteria
We selected all randomized controlled trials (RCTs) of any antithrombotic treatment versus no antithrombotic treatment for short- or long-term secondary prevention of ischemic events after ICH.

Data Collection and Analysis
Three review authors independently extracted data and assessed the included RCTs for risk of bias. We calculated the risk ratio (RR) or odds ratio, as appropriate, and used fixed-effect modeling for meta-analyses.

Main Results
We included 2 RCTs with a total of 121 participants. Both RCTs were of short-term parenteral anticoagulation early after ICH: one tested heparin and the other enoxaparin. The risk of bias in the included RCTs was generally unclear or low. The included RCTs did not report our chosen primary outcome (a composite of all serious vascular events including ischemic stroke, myocardial infarction, other major ischemic event, ICH, major extracerebral hemorrhage, and vascular death). Parenteral anticoagulation did not significantly affect case fatality (RR, 1.25; 95% confidence interval, 0.38–4.07 in one of the trials involving 46 participants), ICH, or major extracerebral hemorrhage (no detected events in of the trials involving 75 participants), growth of ICH (RR, 1.64; 95% confidence interval, 0.51–5.29 in both trials involving 121 participants), deep vein thrombosis (RR, 0.99; 95% confidence interval, 0.49–1.96 in both trials involving 121 participants), or major ischemic events (RR, 0.54; 95% confidence interval, 0.23–1.28 in both trials involving 121 participants). The literature search identified 6 trials that are ongoing or ready to start recruitment (see full review).

Conclusions
There is insufficient evidence from RCTs to support or discourage the use of antithrombotic treatment after ICH. RCTs comparing starting versus avoiding antiplatelet or anticoagulant drugs after ICH appear justified and are needed in clinical practice.

Acknowledgments
This article is based on a Cochrane Review published in The Cochrane Library 2017, Issue 5 (see www.thecochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and The Cochrane Library should be consulted for the most recent version of the review.

URL: http://dx.doi.org/10.1002/14651858.CD012144.

Disclosures
Eivind Berge is a coordinating investigator of the planned STATICH trial (Study of Antithrombotic Treatment After Intracerebral Haemorrhage). Elisabeth Forfang is a managing investigator of the planned STATICH trial. Rustam Al-Shahi Salman is a chief investigator of the UK REstart or STop Antithrombotics Randomised Trial (RESTART; www.RESTARTtrial.org, ISRCTN71907627). The other authors report no conflicts.

Reference

Key Words: cerebral hemorrhage  myocardial infarction  secondary prevention  stroke  venous thrombosis

Received June 20, 2017; final revision received June 20, 2017; accepted June 27, 2017.

From the School of Medicine, Monash University, Melbourne, VIC, Australia (L.A.P., J.B.); Department of Internal Medicine, Oslo University Hospital, Norway (E.B., E.F.); Department of Neurology, Akershus University Hospital, Lørenskog, Norway (O.M.R.); School of Medicine, Sir Charles Gardiner Hospital Unit, The University of Western Australia, Perth, Australia (G.J.H.); Department of Public Health, Xi’an Jiaotong-Liverpool University, Suzhou, China (E.V.); and Centre for Clinical Brain Sciences, University of Edinburgh, United Kingdom (R.A.-S.S.).

*L. Perry and Dr aBerge are joint lead authors.

Correspondence to Luke A. Perry, BSc, Monash University, Melbourne, VIC 3800, Australia. E-mail lukeaperry@gmail.com (Stroke. 2017;48:e247. DOI: 10.1161/STROKEAHA.117.018215.)

© 2017 American Heart Association, Inc.
Antithrombotic Treatment After Stroke Because Of Intracerebral Hemorrhage
Luke A. Perry, Eivind Berge, Joshua Bowditch, Elisabeth Forfang, Ole Morten Rønning, Graeme J. Hankey, Elmer Villanueva and Rustam Al-Shahi Salman

Stroke. 2017;48:e247; originally published online August 17, 2017;
doi: 10.1161/STROKEAHA.117.018215

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/48/9/e247

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/