CT Perfusion in Acute Stroke: Added Value or Waste of Time?

To the Editor:

We read with interest the 2 recent articles by Zhu et al1,2 regarding the usefulness of computed tomography perfusion (CTP) studies for predicting outcomes in acute stroke patients. We are puzzled by the analysis of data from the same group of patients being interpreted in such diametrically opposite ways by the same authors.

In the first article,1 the authors conclude that a cerebral blood flow/cerebral blood volume mismatch or demonstration of an ischemic penumbra on CTP maps alone cannot predict functional outcome unless recanalization status is also considered. If recanalization recurs, penumbra is a positive outcome predictor or vice versa. As the authors state, it is impossible to know the recanalization status at the time of treatment decision. So CTP, by implication, is of little predictive use by itself.

In the second article,2 a mere 35 pages later, the authors state that the CTP-demonstrated penumbra constitutes unique information and is an independent predictor of 90-day modified Rankin Score. Although they mention that CTP data are only a “hallmark” of positive outcome if there is recanalization, they omit any reference to their own work showing its irrelevance. Therefore, the CTP component of an acute stroke workup now adds value. This is confusing and suggests that the authors themselves have no clear understanding of the role of CTP in acute stroke imaging.

Despite the authors’ assertion that CT angiography is not useful for assessing collateral status, the references used are outdated. Many centers are questioning the use of CTP and using noncontrast CT and CT angiography source images to assess the penumbra, guide treatment, and predict outcomes.3,4 Studies have shown that CT angiography source images (3- to 4-mm axial reformats of the raw data) in modern scanners can distinguish penumbra from infarct core and that the postcontrast CT can delineate the core infarct,3 thus essentially providing the same data as CTP. This information is obtained quickly and needs no additional time or computer expertise. Many stroke centers are eliminating CTP completely, given the extra time, radiation, and processing time for questionable benefit.

The usefulness of CTP in acute stroke imaging is still uncertain, and more study is required. Confusing interpretations of the same data with contradictory conclusions do nothing to clarify this question.

Disclosures

None.

Manas Sharma, MBBS, MD
David M. Pelz, MD, FRCPC
Department of Medical Imaging
Western University
London, Ontario, Canada

CT Perfusion in Acute Stroke: Added Value or Waste of Time?
Manas Sharma and David M. Pelz

Stroke. 2013;44:e115; originally published online August 15, 2013;
doi: 10.1161/STROKEAHA.113.002355
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2013 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/44/9/e115

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/