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 al. 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, 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, 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the authors’ assertion that CT angiography is not useful for assessing collateral status, the references used are outdated.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. 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, 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.

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