Acute cerebrovascular syndrome: time for new terminology for acute brain ischemia

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A transient ischemic attack (TIA) has traditionally been defined as a sudden, focal neurologic deficit of presumed vascular origin lasting less than 24 h. The assumptions that TIAs do not result in permanent brain injury and that TIA symptoms disappear because of prompt spontaneous reperfusion have existed for many years. Symptoms lasting more than 24 h are considered to reflect cerebral infarction and represent a stroke. These long-established definitions are, however, no longer compatible with current concepts of brain ischemia; ischemic symptoms lasting more than a few hours often result in brain infarction, irrespective of the time course of clinical resolution. In 2002 a group of cerebrovascular specialists, therefore, proposed that TIA be redefined as "...a brief episode of neurologic dysfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than one hour, and without evidence of acute infarction" (Albers GW *et al.* [2002] *N Engl J Med* 21: 1713–1716). On the basis of this definition, the term 'stroke' is appropriate for an ischemic episode that results in cerebral infarction, regardless of duration.

This new definition has been endorsed and accepted by many cerebrovascular experts and incorporated into the study design of several major clinical trials. Others, however, have questioned the value of the new definition and raised multiple concerns. A common criticism involves the phrase "typically lasting less than one hour", as it is estimated that about 20% of TIAs last longer than 1 h. Another issue is that currently there is no well-accepted and widely available gold standard for documenting small brain infarctions. Some experts have suggested that episodes of brief duration (<24 h) associated with small infarctions represent high-risk, unstable conditions that should be separately classified as 'cerebral infarction with

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transient symptoms' or 'transient symptoms with infarction'.

I believe it is time to follow the lead of our cardiovascular colleagues and adopt the concept of an 'acute cerebrovascular syndrome'. This label could serve as an umbrella term for all patients who present with symptoms suggestive of abrupt focal disruption of the blood supply to the brain. Following diagnostic evaluation, patients can then be subdivided into the categories of acute brain ischemia, acute brain hemorrhage, or a nonvascular diagnosis. Acute brain ischemia can be further separated into TIA or stroke on the basis of whether infarction occurs, with TIA defined as a transient episode of neurologic dysfunction caused by focal brain or retinal ischemia without acute infarction, and ischemic stroke defined as infarction of central nervous system tissue.

Like angina episodes, TIAs typically last less than 1 h but occasionally can last many hours. The above definition eliminates arbitrary time limits; if brain imaging or other diagnostic studies document acute infarction then the diagnosis of ischemic stroke is confirmed regardless of symptom duration. Neuroimaging and diagnostic laboratory criteria for cerebral infarction need to be clearly defined, and this remains a challenge. Diagnostic capabilities and techniques are rapidly evolving; therefore, specific criteria for documenting cerebral infarction will also evolve, just as the criteria for diagnosing myocardial infarction have evolved over time. Diagnostic certainty will depend on the extent of the evaluation individual patients receive, which is typical of many medical diagnoses.

The concept of an acute cerebrovascular syndrome parallels the accepted approach for cardiac ischemia and provides a framework for incorporating future advances in stroke diagnosis.

GW Albers is an Advisory Board member of Nature Clinical Practice Cardiovascular Medicine.

Competing interests

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