Interventional Management of Stroke

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See related article, pages 1770–1773.

Intravenous thrombolysis has generally been accepted and is currently the only FDA approved medical therapy for treatment of patients with acute ischemic stroke. Its use is associated with improved outcomes of patients who can be treated within 3 hours of stroke onset. A higher concentration of thrombolytic agents delivered directly into the thrombus has led to the promotion of intra-arterial thrombolysis, although the possible clinical benefits may be counterbalanced by delays to initiating treatment.

With the evolving concept of interventional management of stroke, several options of multimodal reperfusion therapy are being evaluated. Options include emergency angioplasty and stenting as well as mechanical disruption or extraction of the thrombus. Such mechanical interventions are usually performed in combination with either intravenous or intra-arterial thrombolysis. Among these, placement of both balloon-mounted and self-expanding stents has been successfully performed in conjunction with thrombolytic therapy, the rationale for acute stenting being the prevention of vessel reclosures occurring after recanalization with other modalities; recent reports have established stent placement as an independent predictor of recanalization of both intracranial and extracranial acute cerebrovascular occlusions. Ongoing improvements of the neurointerventional materials available have led to the introduction of self-expanding stents for intracranial applications; these can be navigated easier through the cerebral vasculature when compared to balloon-mounted stents and can be deployed savefully with sufficient radial force but at significantly lower pressures than balloon-expandable stent devices. More recently, a new self-expanding reconstrainable nitinol stent system for intracranial use has been introduced. The advantages of this device are (1) rapid access to cerebrovascular target areas since it can be introduced into a standard microcatheter and (2) the possibility of recapturing and redeploying the stent after partial initial deployment in the cerebral artery. Although initially designed as a neck bridging device for the endovascular therapy of broad necked intracranial aneurysms, its use in the context of interventional management of stroke is foreseeable.

The publication of Kelly et al demonstrates the current possibilities of interventional management of stroke due to both the manual skills of an experienced team of neurointerventionalists and the ongoing improvements of endovascular techniques and materials. The idea of using a reconstrainable self-expanding stent as a temporary device in the setting of acute stroke is new and appealing, since stent-related complications including stent thrombosis, parenchymal hemorrhages under prolonged multiple antiplatelet agent therapy, and in stent stenosis can be circumvented.

It is of major importance, however, that procedures as the one reported here may only be performed at experienced stroke centers with immediate access to cerebral angiography and qualified neurointerventionalists; otherwise, the possible clinical benefits of interventional management of acute stroke using stents and/or clot-retrieving devices will be counterbalanced or outweighed by delays to initiating treatment and by inacceptably high treatment-related morbidities.

For the treatment of acute ischemic stroke, the usefulness of mechanical endovascular procedures other than the use of the MERCI device has not been established to date. It is the current recommendation that such other devices should be tested in the setting of clinical trials. Rather than promoting the use of these devices outside of clinical trials, the present publication highlights that with rapidly improving endovascular materials and techniques, certain treatment strategies have become available to the experienced neurointerventionalist, which may not be recommended to date as standard procedures but may in selected cases save patients’ lives in expert hands.

Disclosures

None.

References


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**Key Words:** stroke management  ■  neurointervention
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*Stroke*. 2008;39:1663-1664; originally published online April 3, 2008;
doi: 10.1161/STROKEAHA.107.510263
*Stroke* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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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/39/6/1663

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