Introduction

Management of ischemic cerebrovascular disease

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The management of ischemic cerebrovascular disease has undergone significant changes in the past 25 years. However, despite enormous advances, there are still many unresolved and controversial issues. This issue of Neurosurgical Focus is dedicated to the current management of ischemic cerebrovascular disease and contains 12 articles evaluating different facets of this disease.

Imaging techniques play a major role in allowing better characterization of plaque composition and “instability.” Further refinements will be critical in guiding individualized therapeutic decisions in patients with carotid artery stenosis. In the first article, DeMarco and Huston provide an update on this topic and summarize potential future directions.

Despite the landmark trials completed in the past 20 years, the management of asymptomatic carotid artery stenosis continues to be a controversial topic. Progress in medical therapy with the widespread use of lipid-lowering agents and better antihypertensive drugs combined with lifestyle modifications has improved the outlook of patients with asymptomatic carotid artery stenosis. In view of these developments, it may be time to “rethink our therapeutic options” as suggested by the second article in this issue. Current ongoing and planned multicenter studies regarding the optimal management of asymptomatic carotid artery stenosis will not only compare endarterectomy with angioplasty and stenting, but will also include a “best current medical therapy” arm to reflect the ongoing controversy outlined in this article.

The management of acute ischemic stroke has undergone dramatic changes. As recently as the early 1990s, a “ nihilistic approach” was common among treating physicians faced with a patient with an acute ischemic stroke given the recognition that “little could be done once the stroke has occurred.” Intravenous thrombolysis for patients evaluated within the first few hours after an ischemic stroke has markedly affected this mindset. In patients with large-vessel occlusion who have a contraindication for intravenous thrombolysis or who fail to improve after intravenous thrombolytics, endovascular mechanical clot retrieval has become a rapidly evolving option with high rates of recanalization. The ability to identify “tissue at risk” based on imaging in these patients is very important for proper patient selection. The topic of imaging of acute ischemic stroke is reviewed by Tong and coworkers.

Advances in wireless communication and mobile devices continue to dramatically alter the patient–doctor interaction. These recent technological developments have already begun to play a key role in broadening our ability to provide the highest level of expertise to stroke patients who may live some distance from a stroke center, as discussed by Rubin and coworkers in an update on these exciting initiatives.

Despite the theoretical appeal of endovascular techniques and the ability to achieve very high rates of recanalization with modern endovascular mechanical devices, the role and efficacy of this therapy has recently been questioned by authors of several multicenter studies. Mokin and coworkers address, in a thoughtful review, the current role of endovascular revascularization for acute ischemic stroke in view of the results of the most recent trials. This article is also featured and discussed in a special podcast accompanying this issue. The 3 subsequent articles are also related to endovascular treatment and include a retrospective analysis of a large cohort of young patients with acute ischemic stroke treated using endovascular recanalization by Chalouhi et al., a review of the current status of endovascular treatment for acute retinal occlusion by Agarwal and coworkers, and a stand-alone editorial by Cloft on issues related to workforce demand in view of recent developments in the treatment of acute ischemic stroke.

After the landmark Extracranial-Intracranial (EC-IC) Bypass Study was published in 1985, which showed no...
benefit from surgical bypass in patients with severe stenosis or occlusion of the internal carotid artery and middle cerebral artery, pioneering work by the “St. Louis group” suggested that a subgroup of patients with internal carotid artery occlusion and metabolic demand may benefit from the EC-IC bypass procedure. This notion led to the Carotid Occlusion Surgery Study (COSS), which once again failed to demonstrate a convincing beneficial effect of surgical bypass. Lessons learned in the course of this latest clinical trial are discussed by Reynolds and coworkers.

Some of the most important advances in the management of ischemic stroke have occurred in primary and secondary prevention and, in particular, optimization of the management of stroke risk factors. Katz and coworkers provide an update on this issue, important to all patients we see with ischemic cerebrovascular disorders.

This issue of *Neurosurgical Focus* is concluded by 2 more articles: one by Khanna et al. on the potential benefits of a relatively novel compound, glibenclamide, on the prevention of secondary injury following ischemic stroke and a review by Kennedy and coworkers on the role of revascularization in children with moyamoya syndrome due to sickle cell anemia.

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