Preface

Ángel Chamorro, MD, PhD; Gustavo C. Román, MD

During the XIX European Stroke Conference (Barcelona, Spain, 25th–28th May, 2010), a meeting on Recent Developments and Future Directions in Stroke Management and Prevention was held with the sponsorship of Grupo Ferrer, Barcelona, Spain. During this meeting, 542 attendees from 50 countries worldwide met for a full-day session in a forum that brought together stroke leaders from Spain, the United States, and the United Kingdom. The proceedings of the meeting are summarized in this special issue of Stroke that includes recent advances in the field of stroke research, including some previously unpublished material, as well as a number of unmet clinical challenges and potential therapies. We believe that this externally peer-reviewed supplement will be of interest to the Stroke audience.

Professor Louis Caplan1 provides a fascinating historical introduction on the classification of stroke. He describes his pioneering role in the 1970s to establish the first computer-based diagnostic program for stroke, an effort that eventually led to the Harvard Stroke Registry and the Stroke Data Bank. By the 1980s, the development of imaging techniques had improved the diagnostic accuracy of stroke subtypes and their pathogenesis. The fruits of those early efforts are reflected in the multiple, national, and international stroke data bases that continue to provide epidemiological and clinical data, demonstrating wide ethnic and geographical differences in the pathogenesis of stroke subtypes.

Classically, the concept of ischemic penumbra designates areas of hyperperfused brain tissue in which blood flow is too low to maintain electric activity but sufficient to preserve normal function of ion channels. Indeed, the short duration of the ischemic penumbra has been a major booster to the view that acute stroke is a medical emergency. This state of affairs also fostered the creation of stroke units and prompted the corresponding structural and organizational changes in hospitals caring for acute stroke patients to secure a swift and accurate diagnosis along with rapid initiation of the most appropriate therapy. In this supplement, Ramos-Cabrera and colleagues review our current understanding of the ischemic penumbra concept and discuss the potential value of considering this concept not only as a diagnostic goal but also as a biochemical target amenable to potential enhancement of brain plasticity, neuroprotection, and neurorepair.2

Lawrence Wechsler discusses fundamental issues regarding image-based detection of brain tissue viability in patients with acute stroke.3 Certainly, defining the benefits and limitations of multiparametric brain imaging in these patients is a topic of major importance and a mandatory step in the aim to administer reperfusion therapies outside a strict time window. Wechsler draws attention to relevant imaging questions that remain largely unresolved; therefore, as he points out, image-guided thrombolysis is an approach that cannot be recommended in routine clinical practice at the present time.

Carlos Molina complements the picture with an updated review of several reperfusion strategies which go beyond currently approved clinical practice.4 Thus, his article discusses a number of hot issues, such as the role of thrombolytic drugs other than intravenous alteplase, the use of mechanical devices, the value of combined thrombolysis approaches, and the utility of sonothrombolysis.

Juan Arenillas reviews the rapidly evolving field of intracranial atherosclerotic disease (ICAD) from the epidemiological, imaging, and therapeutic viewpoints.5 He concludes that ICAD is the most common cause of ischemic stroke worldwide; new imaging techniques such as high-definition MRI and intravascular sonogram should allow a more accurate diagnosis and a better understanding of pathophysiological mechanisms, including intraplaque hemorrhage. Optimal treatment of ICAD has not been established, but it is hoped that early presymptomatic diagnosis will result in correction of risk factors and stroke prevention.

Marc Fisher analyses the reasons for past failure of numerous agents with neuroprotective effects in the experimental animal.6 Fisher suggests that novel approaches are needed for future testing, such as reperfusion along with use of drugs with both neuroprotective and recovery-enhancing effects, as exemplified by granulocyte colony stimulating factor and citicoline.

Sergio Amaro and colleagues from Ángel Chamorro’s team present data indicating that serum uric acid, an endog-
enous antioxidant, appeared to improve the benefits of alteplase in a group of 317 consecutive stroke patients. By the same token, significantly lower levels of uric acid were found in patients with malignant MCA infarction and parenchymal hemorrhage after thrombolysis. These data support the role of oxidative stress in patients with acute stroke and provide solid arguments for a future formal trial of exogenous uric acid plus alteplase. Moro and colleagues review experimental research using citicoline as a drug for neuroprotection. Moro et al provide recent evidence showing that citicoline may increase ATP availability in neurons and increase membrane levels of EAAT2 glutamate transporters in astrocytes. These factors might contribute to reduce excitotoxicity after acute stroke. Moreover, Moro et al also describe some potential neurorepair effects of citicoline, including an increase in dendritic spines and an augmented density of pyramidal cells. According to the authors, these actions might explain the improved behavior and function shown by animals treated with citicoline after experimental stroke.

Antoni Dávalos and Julio Secades review the latest experimental and clinical data on citicoline, including white matter protection against chronic ischemia resulting from bilateral common carotid occlusion in the rat and the consistent results from a meta-analysis of focal models of experimental stroke in animals. Dávalos and Secades also review 2 currently on-going human trials of citicoline. The US-based citicoline brain injury treatment trial (COBRIT) involves ~1500 patients with complicated mild, moderate, or severe traumatic brain injury; this trial is due to be completed in 2011. The ICTUS trial (International Citicoline Trial on acUte Stroke) is being conducted in Europe with a maximum of 2600 stroke patients, of which 1497 patients have been recruited in 50 active centers in Spain, Portugal, and Germany.

José Álvarez-Sabín and Gustavo Román present data on the encouraging results obtained in multiple trials on the use of citicoline in patients with cognitive decline and dementia of vascular origin, including Alzheimer’s disease mixed with cerebrovascular disease. Álvarez-Sabín and Román concluded that citicoline prevents poststroke cognitive decline based on a recent trial of 347 patients with first-ever stroke who received citicoline during 6 weeks and then were randomly assigned to continue citicoline treatment (1 g/d) up to the 6 month (n=172) or to stop citicoline therapy (n=175). These data appear to confirm in humans the neuroprotective and recovery-enhancing (neurorepair) effects of citicoline demonstrated in experimental animals.

In summary, this special issue of Stroke on recent advances in stroke research presents important information on topics of clinical importance, including newer imaging methods and novel approaches to treatment, including agents such as exogenous uric acid, granulocyte colony-stimulating factor, and citicoline. We hope the reader will find the information relevant.

Acknowledgments

Symposium Organizers: José Álvarez-Sabin, MD, PhD, University Hospital Vall d’Hebron, Neurovascular Unit, Barcelona, Spain; Ángel Chamorro, MD, PhD, Comprehensive Stroke Center, Hospital Clinic, University of Barcelona, Barcelona, Spain; Antonio Dávalos, MD, PhD, Autonomous University of Barcelona, Department of Neurosciences, Barcelona, Spain; Joan Montaner, MD, PhD, University Hospital Vall d’Hebron, Neurovascular Research Laboratory, Barcelona, Spain.

Supplement Sponsors: Fundació Clínic per a la Recerca Biomèdica, Ferrer Grupo, and Gendiag.

References


Key Words: prevention  ■ treatment
Proceedings of Recent Developments and Future Directions in Stroke Management and Prevention Symposium: Preface
Ángel Chamorro and Gustavo C. Román

Stroke. published online December 16, 2010;
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2010 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/early/2010/12/16/STROKEAHA.110.608802.citation

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/