

Introduction

Selected Reports from the 66th Annual Meeting of the American Academy of Neurology

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Multiple sclerosis (MS) is a chronic, potentially devastating disease caused by a complex interaction of genetic, environmental, and immunopathologic factors. Over the past two decades, laboratory researchers and clinical investigators have discovered new clues that extend far beyond simple descriptions of MS as a demyelinating disease of the central nervous system. Strides in imaging and histologic techniques, characterization of the disease in younger and older patients, physiotherapy, and novel pharmacologic agents offer new hope for an eventual cure and even reversal of the ravages of MS.

Over 11,000 researchers, physicians, nurses, pharmacists, and other allied health professionals met in Philadelphia, Pennsylvania, from April 26 to May 3, 2014, to attend the 66th Annual Meeting of the American Academy of Neurology (AAN). As the largest international meeting of neurologists and neuroscience professionals, this conference offered numerous poster and abstract sessions, workshops and courses, symposia, and roundtable discussions to explain basic concepts, current best practices, and a glimpse into the future of patient-centered neurologic care. The authors of this edi-

tion of *The Neurology Report*, all fellows in neurology, neuroimmunology, or MS, attended a variety of scientific sessions and lectures to report on cutting-edge research, new pharmacologic discoveries for treating patients with MS, and targets for future study.

■ ADVANCES IN BASIC AND TRANSLATIONAL SCIENCE RESEARCH

A complete characterization of MS clearly is not limited to inflammation and demyelination of the white matter. Salim Chahin, MD, from the University of Pennsylvania Perelman School of Medicine, summarizes our current knowledge of the neuropathology of MS and the evolution of the disease at both the molecular and anatomic levels. Dr. Chahin contrasts relapsing-remitting MS (RRMS) with secondary-progressive MS (SPMS); considers features of MS that result in disease progression and disability; and describes the phenomenon known as remyelination, which offers hope of MS remission. An epidemiologic discussion provides an overview of world populations most affected by MS, environmental factors and infectious agents that may be linked with the disease, and risk factors for its development. Finally, this article throws genetics into the mix, combining information about genetic susceptibility and environmental risk factors to enrich the discussion.

■ THE EVOLUTION IN DIAGNOSIS AND TREATMENT

Tiffani Stroup, DO, from the University of Illinois at Chicago College

of Medicine, covers the importance of imaging in diagnosis and monitoring of MS patients. Combining findings from magnetic resonance imaging (MRI) with patient and family histories and physical examination guides individualization of treatment strategies and selection of particular disease-modifying therapies (DMTs). Descriptions of diseases that mimic MS aid in the differential diagnosis of MS and lead to appropriate treatment, symptom management, and judicious use of medical resources. Dr. Stroup also touches upon the optimal treatment of MS relapse, methods for defining patient response to DMTs, and strategies for relieving common symptoms of MS.

■ CURRENT AND EMERGING THERAPIES

Today's treatments for MS serve as a foundation for the pharmacologic breakthroughs to come. William Meador, MD, from the University of Alabama at Birmingham School of Medicine, presents an overview of current treatment strategies used in different populations of MS patients and considerations for drug selection. Dr. Meador discusses the goals of therapy in everyday practice and whether physicians should strive for "no evidence of inflammatory disease activity" in how they manage their MS patients. His paper also addresses the next decade of MS research, including new findings on remyelination, manipulation of genetic findings, and investigation of neuroprotective agents. Finally, Dr. Meador compares identification and treatment of pediatric and adult-onset



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MS and examines targets of ongoing therapeutic research.

■ DIMETHYL FUMARATE AND PEGINTERFERON β -1A

Pavan Bhargava, MD, from the Johns Hopkins University School of Medicine, reviews post hoc analyses of pivotal clinical trials evaluating dimethyl fumarate, which was approved in March 2013 by the US Food and Drug Administration (FDA), and peginterferon β -1a, which is currently under FDA review, in specific patient subpopulations. Among the research trials discussed are the Determination of the Efficacy and Safety of Oral Fumarate In RRMS (DEFINE), the Efficacy and Safety Study of Oral BG00012 With Active Reference in RRMS (CONFIRM), the Dose-Blind, Multicenter, Extension Study to Determine the Long-Term Safety and Efficacy of Two Doses of BG00012 Monotherapy in Subjects with RRMS (ENDORSE), and the Efficacy and Safety Study of BIIB017 (pegylated Interferon β -1a) in Participants With

RRMS (ADVANCE). The outcomes of post hoc analyses of these studies expand our knowledge about racial differences in patient response, the effects of these new DMTs on patient quality of life and freedom from disease activity, their pharmacokinetics and pharmacodynamics, and their role in the therapeutic armamentarium we can bring to bear in treating RRMS. Notably, neither of these drugs nor any of the approved DMTs that preceded them have shown significant benefit in treating MS once it has transformed to the progressive form of the disease.

■ SYMPTOMATIC MANAGEMENT

Symptomatic management of MS is often overlooked in the understandable desire to limit or halt the underlying immunopathology of the disease but is of undeniable importance in keeping MS patients strong and physically functional, relieving their discomfort, and preventing disability. Ariel Antezana, MD, from the Multiple Sclerosis Comprehensive Care Center at New York University's Langone

Medical Center, summarizes current strategies for managing spasticity; locomotion difficulties; sleep disorders; fatigue; cognitive dysfunction; pain; mental depression; and gastrointestinal, genitourinary, and sexual dysfunction experienced by MS patients. Physical therapy and occupational therapy, as Dr. Antezana discusses, are tremendously important adjuncts to pharmacologic therapy to increase locomotion, lessen fatigue and other symptoms, and improve the quality of life of MS patients.

We are grateful to these authors for bringing us these reports from the 2014 AAN meeting and for their incisive analysis of the importance of the findings presented and discussed there. In the coming weeks, look forward to more cutting-edge information on the etiology, diagnosis, and treatment of MS as *The Neurology Report* visits the joint annual meeting of the Consortium of Multiple Sclerosis Centers (CMSC) and the Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) in Dallas.