

New horizons for multiple sclerosis therapeutics: milestones in the development of ocrelizumab

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Abstract: Multiple Sclerosis (MS) is an inflammatory and neurodegenerative disease of the central nervous system, and both T and B cells are involved in its pathogenesis. The vast majority of disease-modifying drugs used for MS act on the inflammatory component of the disease and are approved for use in relapsing-remitting (RR) patients. Ocrelizumab (OCR) is the only MS drug that has been approved by the US Food and Drug Administration (FDA) not only for patients with RRMS but also for patients with primary progressive (PP) MS. OCR is a humanized anti-CD20 monoclonal antibody that can deplete the targeted B cells through antibody-dependent cellular cytotoxicity. Treatment involves administration by intravenous infusion every 6 months. OCR can cause long-lasting B-cell depletion and change the pool of reconstituted B cells. Phase III clinical trials have confirmed the results of previous Phase II studies. In particular, OPERA I and II trials, which were performed in patients with RRMS, showed a reduction in the annualized relapse rate, the risk of disability progression, and the number of new/enlarging T2 lesions and enhancing lesions measured using brain magnetic resonance. The ORATORIO trial, performed in PP subjects, showed that OCR can reduce disability progression, improve performance on the timed 25-foot walk, and decrease the total volume of T2 lesions and the mean number of new or enlarging T2 lesions. The most frequent adverse events were the infusion-related reactions and infections. Infections were mostly nasopharyngitis, as well as upper respiratory and urinary tract infections. OCR gives no indication for severe or opportunistic infections. There is not a clear increased risk of malignancies. Nevertheless, it could not be excluded. Real-life registries will provide more information about the long-term safety, the risk of exposure during pregnancy, and the risk of rare adverse events. In this review, we analyze the evidence regarding the efficacy and the safety of OCR.

Keywords: multiple sclerosis, ocrelizumab, anti-CD20 antibody

Introduction

Multiple sclerosis (MS) is an inflammatory and neurodegenerative disease of the central nervous system. At the onset of the disease, the most common clinical course is the relapsing-remitting (RR) phenotype, while a minority of patients experience an immediate progression of disability, referred to as the primary progressive (PP) phenotype. After initial relapsing course, the patients would eventually shift to a secondary progressive course in which there is a progressive accumulation of disability over time.¹

The clinical manifestations of MS indicate the involvement of various functional systems: motor, sensory, visual, bowel-bladder, cognitive, brainstem, and cerebellar. Moreover, frequent features of the disease are the fatigue and the Uhthoff phenomenon, that is, a transient worsening of symptoms secondary to an increase of body temperature (fever, physical exercise, hot bath, and so on).

In clinical practice as well as in clinical trials, the level of disability is assessed using the expanded disability status scale (EDSS), which ranges from 0 (absence of deficits)

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Multiple Sclerosis Scars Of Childhood New Horizons And Hope

L Darling-Hammond



Multiple Sclerosis Scars Of Childhood New Horizons And Hope:

Multiple Sclerosis, Scars of Childhood John Milton Adams, 1977-01-01 **Multiple Sclerosis** T. Jock Murray, 2004-12-01 Multiple Sclerosis The History of a Disease won a 2005 ForeWord Book of the Year Silver Medal The basic facts about multiple sclerosis are well known it is the most common neurologic disease of young adults usually beginning with episodic attacks of neurologic symptoms then entering a progressive phase some years later Its onset has an average age of 30 and occurs in about 1 in 500 individuals of European ancestry living primarily in temperate climates There appears to be a complex interaction between a genetic predisposition and an environmental trigger that initiates the disease But these facts do not convey the impact of the disease on the people whose lives it affects In this elegantly written and comprehensive history we meet individuals who suffered with MS in the centuries before the disease had a name including blessed Lidwina of Holland who took joy from her misery believing that she was sent to accept suffering for the sins of others Augustus d Est grandson of George III and cousin of Queen Victoria whose case shows how someone with access to the best of medical care of the age was understood and managed and Heinrich Heine the great German poet who also had access to all medical services that were available but who progressed into his mattress grave in two decades aware of the loss of physical ability while still able to compose great poetry to the end From these early cases the author demonstrates how progress in diagnosing and managing multiple sclerosis has paralleled the development of medical science from the early developments in modern studies of anatomy and pathology to the framing of the disease in the nineteenth century and eventually to modern diagnosis and treatment From beginning to end Dr Murray takes us on a fascinating journey of discovery in the process showing how the evolution of our understanding of multiple sclerosis has been part of the greater history of medical knowledge Catalog of Copyright Entries. Third Series Library of Congress. Copyright Office, 1978

Princeton Alumni Weekly , 1977 **Current Catalog** National Library of Medicine (U.S.), First multi year cumulation covers six years 1965 70 *Multiple Sclerosis* J. F. Hallpike, Colin Wallace Maitland Adams, Wallace W. Tourtellotte, 1983

American Book Publishing Record , 1978 *International Journal of Neuroscience* , 1977 **Library of Congress Catalogs** Library of Congress, 1979 American Journal of Public Health , 1980 Includes section Books and reports

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