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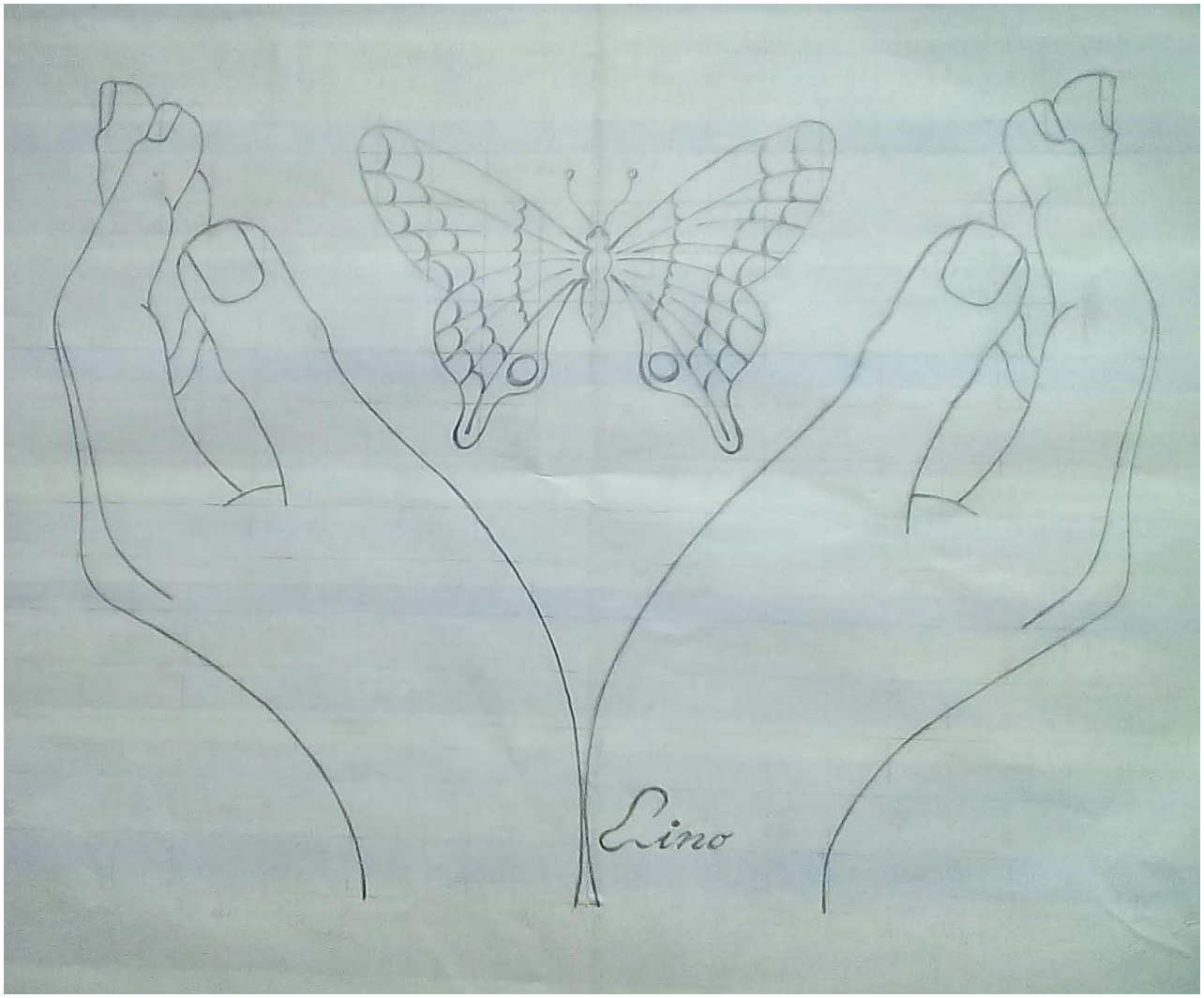

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UPDATES ON MULTIPLE SCLEROSIS DIAGNOSTIC CRITERIA: MEDICAL AND NURSING ASPECTS.

*** Sasanelli R., * Marchitto N., ** Mantuano C., ** Raimondi G., * Paradiso A.**

*** "Sapienza" University of Rome; ** MED-INF Association, Fondi, Latina, Italy,**

Corresponding Authors: **Sasanelli Rossana** e-mail: **sasanelli.1953777@studenti.uniroma1.it**

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ABSTRACT

Background: Multiple sclerosis is an acquired demyelinating disease of the central nervous system. It is the second most common cause of disability in adults in the United States after traumatic brain injury. Many groundbreaking advances have been made in the field of multiple sclerosis since this series last reviewed the disease in 2014. The U.S. Food and Drug Administration has approved 7 new drugs for relapsing-remitting multiple sclerosis and approved the first drug for primary progressive multiple sclerosis. The McDonald criteria for diagnosing multiple sclerosis were updated in 2017. New blood tests can now differentiate patients with multiple sclerosis from those with neuromyelitis optica spectrum disorder, and 3 new drugs have been approved specifically for the latter disorder. In addition, new drugs have been introduced to treat the symptoms of multiple sclerosis. **Aim**: Multiple sclerosis is a chronic, predominantly immune-mediated disease of the central nervous system and one of the most common causes of neurological disability in young adults globally. This review will discuss the epidemiology, diagnosis, differential diagnosis, disease course, and prognosis of multiple sclerosis and focus on recent evidence and advances in these aspects of the disease. The increasing availability of effective therapies for multiple sclerosis, as well as research demonstrating the benefits of early treatment, highlight the importance of timely and accurate diagnosis of multiple sclerosis. **Materials and methods**: There are many works in the international literature regarding multiple sclerosis but, analyzing the scientific

literature relating to the last 5 years, we have been able to note that multiple sclerosis is increasing in incidence and prevalence globally and that recent revisions to the current diagnostic criteria for multiple sclerosis have been proposed in order to facilitate early diagnosis and treatment. Classifying multiple sclerosis into distinct disease phenotypes can be challenging. The prognosis of multiple sclerosis varies substantially between individual patients and a combination of clinical, imaging and laboratory markers can be useful to predict the clinical course and optimize treatment in individual patients. An international group of multiple sclerosis experts, the MS Phenotype Group, has recently revised the phenotypic classifications of multiple sclerosis and published its recommendations already in 2014. Recent developments in research have contributed to improving the accuracy of the diagnosis of multiple sclerosis, especially with regard to the differentiation of multiple sclerosis. from neuromyelitis optica spectrum disorders and integrating into the diagnosis compliance with the 20217 McDonald criteria and subsequent additions. **Results**: There have been many recent advances in the clinical diagnosis and prognosis of patients with multiple sclerosis. Future research will enable the development of more accurate biomarkers for disease categorization and prognosis, which will allow for timely personalized treatment in individual patients with multiple sclerosis. Current phenotypic classifications of multiple sclerosis include relapsing-remitting multiple sclerosis, clinically isolated syndrome, radiologically isolated syndrome, primary progressive multiple sclerosis, and secondary progressive multiple sclerosis. The 2010 McDonald Diagnostic Criteria provide formal guidelines for the diagnosis of relapsing-remitting multiple sclerosis and primary progressive multiple sclerosis. These require demonstration of spread in space and time, taking into account both clinical findings and imaging data. The criteria also require that there is no better explanation for the patient's presentation. Clinical history, examination, and MRI should be more consistent with multiple sclerosis. **Discussion**: The etiology of MS is likely multifactorial, involving genetic, environmental, and many other factors. The pathogenesis is not fully understood, but is thought to involve T-cell-mediated inflammation directed against myelin and other related proteins with a possible role for B cells. The McDonald criteria have been proposed and revised over the years to guide the diagnosis of MS and are based on clinical presentation and magnetic resonance

imaging (MRI) of the brain and spinal cord to assess the spread in time and space. Treatment of MS includes disease modification with immunomodulatory drugs and symptom management to address specific symptoms such as fatigue, spasticity, and pain. The 2010 McDonald Criteria for the diagnosis of multiple sclerosis are widely used in research and clinical practice. Scientific advances over the past 7 years suggest that they may no longer provide the most up-to-date guidance for clinicians and researchers. The International Panel on the Diagnosis of Multiple Sclerosis has reviewed the 2010 McDonald Criteria and recommended revisions. The 2017 McDonald Criteria continue to apply primarily to patients with a typical clinically isolated syndrome, define what is required to satisfy dissemination in space and time of lesions in the central nervous system, and emphasize the need for a better explanation for the presentation. The following changes have been made: In patients with a typical clinically isolated syndrome and clinical or MRI demonstration of dissemination in space, the presence of specific oligoclonal bands in the cerebrospinal fluid supports a diagnosis of multiple sclerosis; Symptomatic lesions may be used to demonstrate dissemination in space or time in patients with supratentorial, infratentorial, or spinal cord syndrome; and cortical lesions can be used to demonstrate spatial spread. Research to further refine the criteria should focus on optic nerve involvement, validation in diverse populations, and incorporation of advanced imaging, neurophysiological, and body fluid markers. **Conclusions**: Correct identification of a typical MS-related demyelination syndrome in a patient with the appropriate demographic profile is critical to making an accurate diagnosis of MS and preventing misdiagnosis. More prominently than previous criteria, the 2017 revisions to the McDonald criteria integrate issues related to the problem of MS misdiagnosis and provide specific recommendations for preventing misdiagnosis. The detailed specification of “typical” demyelinating syndromes and MRI lesion characteristics required to meet the 2017 McDonald criteria is expected to help prevent misdiagnosis of MS. However, if not carefully applied, the 2017 revisions incorporating cortical lesions and including symptomatic MRI lesions in the MRI criteria, and allowing positive OCB to meet the DIS and DIT criteria, may lead to misdiagnosis. As previous authors have noted, the important cautionary comments, modifiers, and clarifications contained in the McDonald criteria are unlikely to be reproduced

in full in textbooks, journals, conferences, or abbreviated pocket cards that contain condensed versions of the MS diagnostic criteria. Some clinicians may not read the caveats and footnotes in the original document. Consequently, educational efforts regarding the correct use of the 2017 McDonald criteria remain critical to preventing MS misdiagnosis.

Reference:

Abstract created from the synthesis of the experimental section of the thesis. Authors: **Sasanelli Rossana**

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