

Impact of low frequency low-intensity magnetic field in the complex neurorehabilitation algorithm of patients with multiple sclerosis

Rodger A. Liddle*

Lagos University, Nigeria

*Corresponding author: Rodger A. Liddle, Professor of Medicine, Faculty Network Member of the Duke Institute for Brain Sciences, Duke University of Medical Sciences, USA; E-mail: rodger.liddle@duke.edu

Received date: January 02, 2021; Accepted date: January 13, 2021; Published date: January 22, 2021

Copyright: © 2021 Liddle RA. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Multiple sclerosis (MS) is an autoimmune demyelinating disease of the central nervous system, usually beginning between 20 and 40 years (predominantly in females). Neurological guidelines consider MS as the most frequent cause of non-traumatic disability in the young adult population. MS patients suffer from loss of autonomy and reduced quality of life, due to paresthesia, dysesthesia; motor weakness, spasticity; balance and coordination dysfunctions; depression and other signs of emotional instability or (even) cognitive impairment. Multiple sclerosis is a highly complex disease with various underlying pathologies, highly variable course and often unpredictable change of disease activity. Despite the undisputed positive impact of immuno-modulatory treatment in relapsing-remitting multiple sclerosis, a major part of patients will gradually accumulate pathological changes at different sites of the central nervous system (CNS) leading to a broad pattern of symptoms, functional deficits and disabilities with complex interferences. In addition, patients with primary progressive course (15-20%) are not responding to these immuno-modulatory agents. Symptomatic therapies have been shown to be helpful, reducing or alleviating certain complaints and functional deficits. The use of these agents, however, is often limited due to side effects. Considering the complexity of multiple sclerosis affecting different personal, social and economic aspects, there is a continuing need for an individualised comprehensive, multidisciplinary long-term management, which constitutes the basic concept of rehabilitation. There is strong evidence that inpatient multidisciplinary rehabilitation is effective in multiple sclerosis decreasing disability and handicap in spite of disease progression. The value of individualised physical therapy and of an adapted endurance or resistance training is also undoubted, leading to significant improvements in disability, mobility, quality of life and reducing risk of falls. For other treatment modalities, however, the impact is less clear. There are disease-specific aspects (especially thermosensitivity, fatigue), which should be considered in planning and performing rehabilitation measures in multiple sclerosis patients. The benefit may be influenced by disability level and cognitive functions. Recent findings suggest

that brain plasticity with compensatory brain activation is progressively lost during the course of disease, which emphasises the need of an early evaluation of multiple sclerosis patients for the necessity of rehabilitation measures.

Our GOAL was to evaluate the impact of low frequency low intensity magnetic field (MF) in the complex neurorehabilitation (NR) algorithm of MS patients (cerebro-spinal form, relapsing-remitting evolution).

Material And Methods

We observed a total of **168 patients** (M:W=46:122), with clinically and MRI proved definite MS, with quadripyramidal syndrome with developed spastic paraplegia and cerebellar ataxia (static, locomotory and dynamic dyscoordination); 2-4 weeks after a relapse. Patients were randomized into two therapeutic groups (84 per group). The control was done before, during and at the end of the NR course (of 20 treatment days), and one month after its end - using a battery of clinical methods and functional scales.

In all patients we applied a complex **NR programme** of cryophysiotherapy and ergotherapy; including proprioceptive neuromuscular facilitation techniques; balance, coordination and gait training; goal-oriented activities. Group (gr) 1 received only this NR programme. In gr 2 we added transcranial and transmedullar MF: bitemporal and longitudinal (on the spine) localization of inductors.

The comparative analysis of RESULTS demonstrates significant improvement in functional capacity (EDSS scale of Kurtzke), autonomy (FIM) and emotional stability (Zung depression scale) - in all patients. In the MF group we observed most relevant reduction of spasticity, paresthesia & dysesthesia; and amelioration of stability (Berg Balance scale).

CONCLUSION: Neurorehabilitation must be included in MS therapeutic guidelines. MF must be obligatory part of the NR-algorithm.