MULTIPLE SCLEROSIS AND YOGA

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ABSTRACT

Introduction. Multiple sclerosis is a chronic disease, characterized by episodes of focal deficits of the optic nerves, brain and spinal cord. The neurological manifestations are versatile, being determined by the variability of the localization and the extension of the demyelination points. However, the lesions have a predilection for certain parts of the central nervous system, resulting in complex signs and symptoms, such as weakness, paraparesis, paresthesia, loss of vision, diplopia, tremor, ataxia, profound sensitivity and bladder dysfunction. The primary symptom in some of the patients consists of weakness or paresthesia, occasionally both, detected at the position of one or more limbs. Usually, there are associated symptoms of limb insensitivity and restriction sensations in the trunk and limbs. Multiple sclerosis is often accompanied by depression, anxiety, insomnia.

Cases presentation. A group of six patients aged between 16 years to 55 years, with multiple sclerosis, recurrent-remissive form, was divided into the control group and the yoga group. Each patient in both groups was evaluated neurologically, but also on the following scales: Hamilton Anxiety and Depression scales, Expanded Disability Status Scale, Modified Fatigue

RéSUMÉ

Sclérose multiple et yoga

Introduction. La sclérose en plaques est une maladie chronique, caractérisée cliniquement par des épisodes de déficits focaux des nerfs optiques, du cerveau et de la moelle épinière. Les manifestations neurologiques sont polyvalentes, étant déterminées par la variabilité de la localisation et l’extension des points de démyélinisation. Cependant, les lésions ont une prédilection pour certaines parties du système nerveux central, entraînant des signes et symptômes complexes, tels que faiblesse, paraparésie, paresthésies, perte de vision, diplopie, tremblements, ataxie, sensibilité profonde et dysfonction de la vessie. Le symptôme principal chez environ une fraction des patients consiste en une faiblesse ou une paresthésie, parfois les deux, détectée à la position d’un ou de plusieurs membres. Sont généralement associés des symptômes d’insensibilité des membres et des sensations de restriction dans le tronc et les membres. La sclérose en plaques s’accompagne souvent d’affections telles que la dépression, l’anxiété, l’insomnie.

Présentation de cas. Un nombre de six patients âgés de seize à cinq ans présentant une forme rémittente et
INTRODUCTION

Multiple sclerosis is the most prevalent chronic autoimmune inflammatory and demyelinating disease of the central nervous system. Multiple sclerosis affects the white matter of the central nervous system by causing demyelination lesions of the axons that contribute to a decrease or blockage of conduction, which produces the symptoms of the disease. The following symptoms may occur: eye pain, especially during eye movements, blurred vision, which are part of optic neuritis, also superficial and deep tactile sensitivity changes in the limbs, most commonly in the lower limbs. The symptoms that concern both the physical and the mental side are: fatigue, asthenia, mood swings, depression and anxiety.

CASES PRESENTATION

We aimed at investigating the possible effects of yoga practice in patients with multiple sclerosis. Recent data from the literature sustain that the physical, as well as the mental symptoms of the patients with multiple sclerosis can be influenced by yoga practice which provides a better mental state, that could also improve the physical symptoms.

This case series aimed to analyze the performance of patients with multiple sclerosis who practiced yoga for six months, from June to December 2018. The patients were evaluated and monitored in the private clinic “Dr. Docu Axelerad Any”, Constanta, Romania. The participants were patients with multiple sclerosis, with the recurrent-remissive form. The patients were individually diagnosed by the same physician and they met the standard criteria to be included in the relapsing-remitting form of multiple sclerosis.

The inclusion criteria in the study were: diagnosis of relapsing-remitting form of multiple sclerosis, age between 16-55 years, ability to sign the informed consent.

The criteria for exclusion of the patients from the study were the following: age below 16 years or over 55 years, diagnosis of primary and secondary progressive forms of multiple sclerosis, inability of the patients to sign the informed consent.

The analysis aimed at investigating the patients both from the physical and the mental points of view. A group of six patients with relapsing-remitting multiple sclerosis was divided in two subgroups, one control group and one group practicing yoga for six months.

Six patients met the criteria for inclusion in the study; they all signed an informed consent and were divided aleatory in two groups: the yoga practicing group and the control group patients, who did not practice yoga and continued the activities as before.

Patients from the yoga group were trained by specialized therapists in the same clinic, they practiced different movements and stretches of yoga, complementing with recommendations of outdoor meditation, in a natural environment, with landscapes, parks or the beach, dependent on the needs and possibilities of the patients. After the first week of

Conclusions. Practicing yoga, meditation and outdoor contemplation with landscapes, for a period of six months have beneficial effects in patients with multiple sclerosis, with relapsing-remitting form. These activities improve the patients' quality of life and quality of cognition.

Keywords multiple sclerosis, yoga, anxiety, depression.

Conclusions. Les résultats de cette série de cas sont que la pratique du yoga, de la méditation et de la contemplation en plein air avec des paysages, pendant une période de six mois, a des résultats bénéfiques pour les patients atteints de sclérose en plaques, avec une forme rémittente-récursive et que ces activités ont une réponse dans l’amélioration de la qualité de vie des patients et la qualité de la cognition.

Mots-clés: sclérose en plaques, yoga, anxiété, dépression.
yoga practice in the clinic, each patient was trained to practice the exercises and moves at home, helped also by a CD with the corresponding yoga techniques.

In each patient, the Expanded Disability Status Scale, a tool that quantifies disability in multiple sclerosis, was calculated at initiation of the study and every month over 6 months. In addition, the Hamilton Anxiety and Depression scales were performed during the six months. Also, for each patient in both groups, the Modified Fatigue Impact Scale was calculated, before, during and after the six months. In addition, we performed a test before, during and after the six months, regarding the quantifying of the unpleasant sensations and feelings that multiple sclerosis patients most often have. Regarding the sphincter activity that is often altered in patients with multiple sclerosis we performed the following tests: the Bladder Control Scale and the Bowel Control Scale during the period of six months. Regarding the visual impairments, we performed the Impact of Visual Impairment Scale in the form of questionnaires during the six months. Perceived Deficits Questionnaire that followed the subjective answers was performed every month during the six months period. Also, the Mental Health Inventory was performed, with the purpose of finding out how the patients felt.

The first patient from the yoga group, A.S., 33 years old, female, had two typical attacks for multiple sclerosis in the central nervous system, with objective evidence for both lesions at the clinical examination and was diagnosed five years before. At the beginning of the six months, the patient had paresthesia to touch and decreased pin sensation on the right side and mild vibratory sense loss in the distal lower extremities. Also, the patient presented altered vision and urinary bladder symptoms. She had difficulties in thinking clearly. The results obtained by the patient before and after practicing yoga for six months are revealed in Table 1.

The second patient from the yoga group, B.I., 36 years old, male, with recurrent-remitting multiple sclerosis, had three typical attacks for multiple sclerosis in the central nervous system, with objective evidence at the clinical examination for both lesions and was diagnosed seven years before. At the beginning of the six months, the patient had stumbling gait, tendency to fall, a decreased rate of rapid alternating movements and dysdiadochokinesia. Also, the patient presented vision problems and bowel problems. The results obtained by the patient before and after practicing yoga for six months are revealed in Table 1.

The third patient from the yoga group, C.D., 38 years old, female, had four typical attacks for multiple sclerosis in the central nervous system, with objective evidence at the clinical examination for three lesions and was diagnosed seven years before. At the beginning of the six months, the patient presented paresthesia on the left limbs, a decreased pin sensation, moderate vibratory sense loss, tremor on the upper limbs, dysdiadochokinesia and heat intolerance. The bladder and bowel problems were present. She had difficulties of thinking clearly and of maintaining a mental balance. The results obtained by the patient before and after practicing yoga for six months are shown in Table 1.

The first patient from the control group, N.V., 31 years old, female, had two typical attacks for multiple sclerosis in the central nervous system, with objective evidence at the clinical examination for both lesions and was diagnosed four years before. At the beginning of the six months, the patient had paresthesia on touch and decreased pin sensation on the right side and mild vibratory sense loss in the distal lower extremities. Also, the patient presented altered vision and urinary bladder symptoms. She had difficulties in thinking clearly. The results obtained by the patient before and after practicing yoga for six months are

| Patient 1 of the Yoga Group | Patient 2 of the Yoga Group | Patient 3 of the Yoga Group |
|-----------------------------|-----------------------------|-----------------------------|
| Before yoga | After yoga | Before yoga | After yoga | Before yoga | After yoga |
| Expanded Disability Status Scale | 3 | 3 | 3 | 3 | 4 | 4 |
| Hamilton Anxiety Scale | 30 | 25 | 20 | 15 | 36 | 30 |
| Hamilton Depression Scale | 16 | 12 | 13 | 9 | 14 | 11 |
| Modified Fatigue Impact Scale | 14 | 8 | 18 | 12 | 20 | 16 |
| The Bladder Control Scale | 5 | 3 | 2 | 2 | 4 | 4 |
| The Bowel Control Scale | 3 | 2 | 6 | 4 | 5 | 4 |
| Impact of Visual Impairment Scale | 5 | 4 | 6 | 5 | 7 | 7 |
| Perceived Deficits Questionnaire | 32 | 25 | 36 | 30 | 42 | 36 |
| Mental Health Inventory | 75 | 64 | 60 | 64 | 60 | 54 |
| MOS Modified Social Support Survey | 72 | 72 | 65 | 75 | 68 | 78 |
difficulties in thinking clearly. The results obtained by the patient before and after the six months are revealed in Table 2.

The second patient from the control group, S.T., 29 years old, female, had two typical attacks of multiple sclerosis in the central nervous system with objective evidence at the imaging and clinical examination for both lesions and was diagnosed three years before. At the beginning of the six months, the patient had stiff muscles and trouble moving her body, problems with coordination and balance, and dizziness. Also, the patient presented vision problems: eye pain and double vision. The patient’s bladder problems were mild. The results obtained by the patient before and after the six months are revealed in Table 2.

The third patient from the control group, V.A., 35 years old, male, had three typical attacks for multiple sclerosis in the central nervous system with objective evidence at the clinical examination for the three lesions and was diagnosed two years before. At the beginning of the six months, the patient had significant changes in neurologic functions, stumbling gait, tendency to fall, rapid alternating movements decreased, dysdiadochokinesia, mild paraparesis, without severe spasticity and paresthesia in the right territory. Also, the patient presented mild vision problems. The patient’s bladder problems were mild. The results obtained by the patient before and after the six months are revealed in Table 2.

**DISCUSSION**

Several studies have shown positive effects of yoga exercises in different diseases, such as diabetes, asthma and hypertension. These results motivated us to study the possible outcome in people with multiple sclerosis with recurrent-remitting form.

The aim of our study was to investigate the possible effects of yoga related to the following functions: cognitive function, mood, fatigue and depression in patients with multiple sclerosis, recurrent-remitting form, with important roles of patients’ quality of life. Studies in the literature showed that mild aerobic exercises have a positive impact on the psychological state of the patients. The state of mind of the patients was investigated by the Hamilton Anxiety and Depression Scale and the group of yoga patients showed improvements in the mood, energy levels and their interest for socializing with other persons. Also, studies that investigated the effects of yoga on the mental state of the patients with different diseases showed major improvements, the majority of patients practicing yoga having changed their perception on the disease, helping them to cope with their diseases and also the results of these patients’ tests have become favorable after practicing yoga.

Studies in the area of the balance in connection to yoga exercises have shown no improvements in the balance and mobility. Our study did not show any improvements in this area, too.

**CONCLUSIONS**

Practicing yoga, meditation and outdoor contemplation with landscapes, in the park or on the beach for six months has beneficial results for patients with multiple sclerosis, with relapsing-remitting form, improving their quality of life, quality of cognition, managing the psychic, decisions and emotions and even may improve the physical form. On the other hand, improvements were observed in the following conditions that often accompany depression, anxiety and insomnia. Mild beneficial changes were observed in the functioning of the gastrointestinal and urinary

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**Table 2. The results obtained by the control group patients before and after the six months.**

|                         | Patient 1 of the Control Group | Patient 2 of the Control Group | Patient 3 of the Control Group |
|-------------------------|--------------------------------|--------------------------------|--------------------------------|
|                         | Before the 6 months | After the 6 months | Before the 6 months | After the 6 months | Before the 6 months | After the 6 months |
| Expanded Disability Status Scale | 3 | 3 | 2 | 2 | 3 | 3 |
| Hamilton Anxiety Scale | 37 | 39 | 25 | 27 | 30 | 32 |
| Hamilton Depression Scale | 13 | 14 | 20 | 23 | 16 | 17 |
| Modified Fatigue Impact Scale | 18 | 21 | 25 | 30 | 20 | 22 |
| The Bladder Control Scale | 3 | 3 | 2 | 2 | 4 | 4 |
| The Bowel Control Scale | 2 | 2 | 3 | 3 | 3 | 3 |
| Impact of Visual Impairment Scale | 7 | 7 | 6 | 6 | 4 | 4 |
| Perceived Deficits Questionnaire | 35 | 38 | 30 | 34 | 30 | 31 |
| Mental Health Inventory | 85 | 87 | 70 | 73 | 70 | 71 |
| MOS Modified Social Support Survey | 66 | 66 | 73 | 73 | 60 | 60 |
systems. It was also noted that these methods helped patients and caregivers to strengthen their relationship. These results should be considered as preliminary ones, their extension being considered in the future on a larger group of patients.

**Author contributions**

D.A.A. was responsible for the diagnostic procedures, clinical diagnosis, and treatment decisions. S.A.Z. and D.A.S. performed the interviews with the patients. S.A.Z., D.A.S. and D.A.D. wrote the manuscript. All authors have read and agreed to the published version of the manuscript.

**Compliance with Ethics Requirements:**

“The authors declare no conflict of interest regarding this article”

“The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study”

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