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ARTICLE

Motor symptoms and the quality of life of relapsing-remitting multiple sclerosis patients in a specialized center in South of Brazil

Sintomas motores e qualidade de vida em pacientes com esclerose múltipla remitente recorrente em um centro especializado no Sul do Brasil

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ABSTRACT

Background: Spasticity, fatigue, muscle weakness and changes in gait are some of the main motor symptoms of Multiple Sclerosis (MS). These changes can interfere with the patients' quality of life. **Objective:** To characterize the motor and quality of life symptoms in patients with relapsing-remitting Multiple Sclerosis at a specialized center. **Methods:** Fifty five patients at the Neuroimmunology Outpatient Clinic of the Hospital de Clínicas de Porto Alegre were evaluated for fatigue (Fatigue Severity Scale — FSS), walking ability (Functional Ambulation Categories — FAC), impact of MS on walking (Multiple Sclerosis Walking Scale-12 — MSWS-12), walking speed (10-Meter Walk Test — 10MWT and the Times 25-foot Walk test — T25FW), functional independence (Barthel Index — BI), functional mobility (Timed Up and Go — TUG), and quality of life (Multiple Sclerosis Impact Scale — MSIS-29). **Results:** The patients were mostly women (69.1%), with average age of 43.3 (±12.1) years old, with time since diagnosis of 8.2 (±5.3) years, and EDSS average of 4.3 (±1.3). On the BI, the mean was 96.6 (±5.7) points and 80% of the patients had FAC 5. At MSIS-29, patients had a higher average score on the psychological scale (19.5±26.7) than on the physical scale (10.2±23.6). Most patients (69.1%) presented fatigue. **Conclusion:** The patients had preserved functional independence and functional walking ability and presence of fatigue. There was minimal impact of MS on patients' quality of life.

Keywords: Multiple Sclerosis; Fatigue; Gait; Quality of Life.

RESUMO

Antecedentes: Espasticidade, fadiga, fraqueza muscular e alterações na marcha são alguns dos principais sintomas motores da esclerose múltipla (MS). Essas alterações podem interferir na qualidade de vida dos pacientes. **Objetivo:** caracterizar os sintomas motores e qualidade de vida de pacientes com EM do tipo remitente-recorrente de um Centro Especializado. **Métodos:** Foram avaliados 55 pacientes do Ambulatório de Neuroimunologia do Hospital de Clínicas de Porto Alegre, quanto a fadiga (Escala de Severidade da Fadiga — FSS), capacidade de deambulação (Categoria de Deambulação Funcional — FAC), impacto da EM na caminhada (Multiple Sclerosis Walking Scale-12 — MSWS-12), velocidade de marcha (Teste de Caminhada de 10 Metros — 10MWT e o de Caminhada Cronometrada de 25 Pés — T25FW), independência funcional (Índice de Barthel — BI), mobilidade funcional (Timed Up and Go — TUG) e qualidade de vida (Escala de Impacto de Esclerose Múltipla — MSIS-29). **Resultados:** Os pacientes eram, em sua maioria, do sexo feminino (69,1%), com média de idade de 43,3 (±12,8) anos, tempo de diagnóstico de 8,2 (±5,3) anos e a média da EDSS de 4,3 (±1,3). A média no BI foi de 96,6 (±5,7) pontos e 80% dos pacientes apresentavam FAC 5. Na MSIS-29, os pacientes apresentaram maior pontuação média na escala psicológica (19,5±26,7) do que na física (10,2±23,6). A maioria dos pacientes (69.1%) apresentou fadiga. **Conclusão:** Os pacientes apresentaram independência funcional e capacidade de deambulação funcional preservadas e presença de fadiga. Houve pequeno impacto da EM na qualidade de vida dos pacientes.

Palavras-chave: Esclerose Múltipla; Fadiga; Marcha; Qualidade de Vida.

INTRODUCTION

Multiple sclerosis (MS) is traditionally considered to be a chronic and autoimmune disease that affects the central nervous system (CNS)[1]. In many countries, it is the leading cause of non-traumatic neurological disability in young adults. It has a higher frequency in women (ratio 2:1)[2].

About 2.5 million people are affected by MS worldwide. In Brazil, the prevalence is heterogeneous, with a minimum rate of 1.36/100,000 inhabitants in the northeastern region

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and a maximum of 27.2/100,000 inhabitants in the south, with an average prevalence of 8.69/100,000 inhabitants[3].

The main form of MS evolution is relapsing-remitting MS[4]. Most individuals with MS (85%) start to present a clinical pattern with flare-up episodes and may present spasticity, fatigue, muscle weakness, and gait and balance disorders as the main motor symptoms[5]. Individuals with MS often have impaired walking ability and gait speed, which may be related to increasing functional mobility limitations, the presence of spastic patterns, and to a decrease in overall motor performance, as well as lack of coordination, imbalance and ataxic gait, which are some of the changes that most influence the quality of life of patients with MS[6].

These limitations are highly disabling for patients, as they directly influence their independence, causing a profound impact on the participation and performance of their Activities of Daily Living (ADLs)[7]. The wide variety of symptoms and impairments affecting patients with MS leads to a negative impact on ADLs, manifested mainly by a significant decline in quality of life (QoL), which influences their health[8].

Cardoso et al.[9] described the clinical and epidemiological characteristics of MS in the State of Bahia, in northeastern Brazil, and found a women-to-men ratio of 4:1, mean age at disease onset of 31.1 (±11.02) years, and the relapsing-remitting clinical form as the most frequent. Grzesiuk et al.[10] analyzed and described the clinical and epidemiological aspects of patients with multiple sclerosis treated in Cuiabá, a city located in the midwestern region of Brazil. The study was conducted on a sample of 20 patients, mostly white women. The average age of patients with MS was 40.2 years, and the average time since disease onset was 6.26 years. The initial/final mean of the Expanded Disability Status Scale (EDSS), used to assess neurological impairment caused by MS, was 1.85/3.9 points.

Currently, there is no study like the ones mentioned above that characterize the population of patients with MS treated in a specialized center in the city of Porto Alegre (RS), and there are also few studies that characterize patients diagnosed with MS in the state of Rio Grande do Sul[11]. Most studies that characterize patients focus only on clinical and epidemiological characteristics. Thus, the goal of this study was to characterize patients diagnosed with relapsing-remitting MS and being treated at the Neuroimmunology Outpatient Clinic of the Hospital de Clínicas de Porto Alegre (HCPA), regarding fatigue, functional mobility, walking ability, walking speed, and functional independence, as well as quality of life. This characterization will enable rehabilitation professionals to identify the main characteristics of patients with relapsing-remitting MS in order to establish more specific treatment objectives according to the functional changes presented by patients with the disease progression.

METHODS

The study included 55 men and women diagnosed with relapsing-remitting MS, aged over 18 years, with EDSS less than 7, who were able to walk independently and who were receiving treatment at the Neuroimmunology Outpatient Clinic of the Hospital de Clínicas de Porto Alegre (HCPA). This study was approved by the HCPA Research Ethics Committee. All patients signed an informed consent form.

The patients were assessed from March to September 2017 with the Fatigue Severity Scale (FSS), composed of nine items on a seven-point scale. Scores range from 9 to 63, with a score greater than or equal to 28 indicating fatigue[12]. The Barthel Index (BI) was used to quantify the functional independence of the sample. A score equal to or greater than 60 points corresponded to functional independence, and below that value, dependence[13].

The Multiple Sclerosis Walking Scale-12 (MSWS-12) was used to measure the impact of MS on walking ability. Values range from 0 to 80, and higher values indicate poorer performance or greater difficulty in walking. The final value obtained is a percentage that varies from 0 to 100%. It represents how much the patient's gait is compromised. The higher the percentage, the greater the impact of MS on walking ability[14]. The patients were assessed regarding their ability to walk and classified according to the Functional Ambulation Categories (FAC). Capacity levels vary from 0, when the individual cannot walk, to 5, when the individual can walk anywhere independently[15].

The 10-Meter Walk Test (10MWT) was used to assess walking speed. The values found were compared with reference values of healthy individuals of the same age and sex[16]. In the Timed 25-foot Walk (T25FW) test, the patient was instructed to walk 7.62 m as fast as possible, but safely. The values found were categorized according to what was proposed in the study by Goldman et al.[17]: <6 seconds, between 6–7.99 seconds, and ≥8 seconds.

The Timed Up and Go (TUG) test was performed to assess the functional mobility of the patients. Functional mobility was characterized as preserved when the test was performed in less than 20 seconds[18]. This study also used the Multiple Sclerosis Impact Scale (MSIS-29). It has a total score ranging from 0 to 100. The highest scores indicate a greater impact of Multiple Sclerosis on health, and, therefore, a worse level of quality of life[19].

The collected data is presented and described by means and standard deviations.

RESULTS

The patients were characterized by gender, age, time since diagnosis, EDSS, and number of flare-ups (Table 1).

As for the ambulation categories (FAC), most patients were classified as independent to walk on any terrain.

In the 10MWT, patients demonstrated preserved comfortable walking speed according to the mean (1.3±0.4 m/s found, 1.2 m/s predicted), considering the mean age of the sample and the predominant sex. The fast speed was decreased (parameter 1.7 m/s, mean found 1.4±0.5 m/s). For the T25FW test, the patients took longer than 6 seconds to complete the test (time between 6–7.9). These findings are confirmed by the result found in the MSWS-12, which characterized the walking ability impairment caused by MS as low (Table 2).

Most patients did not have a deficit in their functional mobility (94.5%), as evidenced by the TUG test. They were independent (96.6%) for their ADL, but were fatigued (69.1%).

When analyzing the questions of the FSS separately, questions 1 ("My motivation is lower when I'm fatigued") and 4 ("Fatigue interferes with my physical performance") had the highest averages in relation to the others, and the mode value in these questions was 7. Most patients chose alternative 7 ("I totally agree") for these two questions, suggesting that for these patients, fatigue seems to interfere with motivation and physical performance.

In this study, the average score of MSIS-29 on the psychological scale and on the physical scale was closer to zero, demonstrating a low impact of MS on patients' quality of life (Table 2).

DISCUSSION

The present study sought to characterize the motor symptoms and quality of life of people diagnosed with MS treated at the Neuroimmunology Outpatient Clinic of the Hospital de Clínicas de Porto Alegre, in Brazil. Fatigue, functional mobility, walking ability, walking speed, and functional independence were the motor symptoms evaluated.

Table 1. Clinical characteristics.

	n (55)	%	Mean	SD (±)
Sex				
Female	38	69.1	-	-
Male	17	30.9	-	-
Age (years)	-	-	43.3	12.1
Proportion female:male	2.2:1	-	-	-
EDSS score (minimum-maximum)	-	-	4.3/1–6	1.4
Time since diagnosis (years)	-	-	8.2	5.3
Number of attacks since diagnosis	-	-	4.2	3.0

n: number of patients; SD: standard deviation; EDSS: Expanded Disability Status Scale.

Finkelsztejn et al.[11], in a study conducted in another city in southern Brazil, with a sample of 67 patients, also found an average age of 43.5 (±11.2) years. The findings of our study corroborate the findings of two other Brazilian studies regarding the average age of patients with MS and that the patients affected by the disease are mostly young adults[10,20].

In the study by Cardoso et al.[9], the average number of flare-ups in patients after diagnosis ranged from 3.74 to 4.9, similar to what was found in this study. As for gender distribution, MS is more common in women, generally with a 2:1 female to male ratio. The predominance of the disease among women, the gender ratio, mean values since time of diagnosis, and EDSS found in this study were similar to those reported by other authors[10,11,19,20].

When assessed using the T25FW test, the patients walked at an average time greater than 6 seconds (6–7.99). In patients with MS who complete the T25FW, these average results are associated with patients who walk using a cane and need assistance with instrumental activities of daily living (IADLs)[16]. The average time for this test indicate that patients should need greater assistance for walking and be unable to perform instrumental ADLs. This was not observed in the patients evaluated here.

Table 2. Motor characteristics and quality of life.

	n (55)	%	Mean/mode	SD (±)
FSS (% with fatigue)	-	69.1	37.8	15.9
FAC			4.5/5	1.1
5	44	80.0	-	
4	2	3.6	-	-
2	9	16.4		-
10MWT				
Comfortable speed (m/s)	-	-	1.3	0.4
Fast speed (m/s)	-	-	1.4	0.5
T25FW (in seconds)			6.2	2.9
TUG (in seconds)				5.5
<20 seconds	52	94.5	10.5	
>20 seconds	3	5.5		
BI (0–100 points)				5.7
Totally independent	33	60.0	96.6/100	
Independent	22	40.0		
MSWS-12	-	-	31.4	14.2
MSIS-29 (0–100 points)				
Physical scale			10.2	23.6
Psychological scale			19.5	26.7

FSS: Fatigue Severity Scale; FAC: Functional Ambulation Category; 10MWT: 10-Meter Walk Test; T25FW Timed 25-Foot Walk; TUG: Timed Up and Go Test; BI: Barthel Index; MSWS-12: Multiple Sclerosis Walking Scale–12; MSIS–29: Multiple Sclerosis Impact Scale-29; n: number of patients; SD: standard deviation. Mode: value that occurs most frequently.

As for the walking speed in the 10MWT, only for the rapid speed, the study subjects presented average value below the predicted values[15]. The time since diagnosis of the patients may have caused some impairments that justify this reduction in walking speed. For Bethoux[21], many patients have a deficit in walking ability and demonstrate a progressive reduction in walking speed with the progression of the disease due to increased spasticity and other indicators of motor control deficit.

In the present study, most patients were classified as being able to walk independently anywhere. Gait abnormalities are common in people with MS and these changes affect activities, participation, and quality of life[22]. EDSS values between 4.0 and 5.5 consider neurological impairment and gait condition. They characterize patients as being able to walk a distance between 100 to 500 m without help or rest[23]. The average EDSS of the patients in the present study was close to these values, characterizing the patients as capable of walking without help, which may justify the results found in the FAC.

Impaired mobility can present early in the disease course. Within a year of diagnosis, 58% of patients report mobility problems, and 10 years after diagnosis, 93% of patients have changes in functional mobility[24]. Most patients in the present study did not have a deficit in their functional mobility. This fact is probably related to the average EDSS values and the disease progression. Confavreux and Vukusic[25] report that despite the variation in prognosis in patients with MS, the time of diagnosis and EDSS can be used to establish average periods of impaired mobility. Patients with eight years of diagnosis walk with some deficit and have EDSS 4, which was observed in this study.

MS patients report that several symptoms affect mobility, including difficulty in walking[24]. Marangoni et al.[26], applied the MSWS-12 to 116 patients and found an average of 33.1% impact of MS on walking, a similar average to that observed in this study. These authors found a positive correlation between T25FW and MSWS-12, suggesting that the time to perform the test is an indicator of patient perception of walking limitations. In this study, patients demonstrated a good performance on T25FW and a low impact of MS on gait.

Fatigue is one of the most common symptoms of MS, with effects on quality of life, imposing limitations on the degree of independence[27]. Most patients evaluated in the study had fatigue. Other authors have also identified the presence of this symptom in 58.7 to 78.4% of patients with MS[28,29,30,31].

Most patients in the present study were independent. Gait disorders are one of the most impacting and disabling for MS patients, as walking is part of most ADLs. It is an individual's main means of independence[32]. The patients in the sample were characterized as able to walk independently anywhere by the FAC test, without a deficit in functional mobility by the TUG test, and with walking without the need for help or rest by the EDSS. These aspects show that the motor symptoms and the evolution of the disease were mild, and that the patients' tendency was to remain independent. This may justify the findings regarding functional independence.

The patients in the present study presented less impact of MS on quality of life. The value of EDSS, disease progression and time since diagnosis may justify the findings regarding the impact of the disease on quality of life. Higher EDSS values translate into greater disability, generating the need for walking assistance[32], which can lead to a greater impact on quality of life. In addition, according to Casetta et al.[33], women with MS have a better quality of life than men because they can adapt to the disease better. Women seem to be more resilient, less vulnerable, and cope better with disability. This study consisted mostly of women, which may justify the results found regarding the low impact of MS on quality of life.

In conclusion, patients treated at the HCPA Neuroimmunology Outpatient Clinic presented as motor symptoms a reduction in fast walking speed and the presence of fatigue. Functional ambulation, functional mobility, and the degree of functional independence were preserved in most patients. MS had minimal impact on walking and on the quality of life of the patients evaluated.

The findings expand the knowledge about the population with relapsing-remitting MS, thus contributing to the establishment of a specific exercise program and guidance to caregivers of patients being monitored in specialized centers.

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