DOI:10.4274/Tnd.15045

Determining the Frequency of Depression and Cognitive Dysfunction in Patients with Multiple Sclerosis

Multipl Sklerozlu Hastalarda Depresyon ve Kognitif Fonksiyon Bozukluğu Sıklığının Belirlenmesi

Emine Bilgi, Hasan Hüseyin Özdemir*, Serpil Bulut**
Elmadağ State Hospital, Neurology Clinic, Ankara,Turkey
*Bismil State Hospital, Neurology Clinic, Ankara, Diyarbakır, Turkey
**Firat University Faculty of Medicine, Department of Neurology, Elazig, Turkey

Summary

Objective: Multiple sclerosis (MS) not only leads to different levels of disabilities in mobility and functional activities, but also creates severe disability and impairs the quality of life by limiting the patient's social and occupational life. Most MS patients experience depression. In addition, cognitive dysfunction is also present. In this study we aimed to determine the frequency of depression and cognitive dysfunction in MS patients.

Material and Method: One hundred and eight patients diagnosed with MS were evaluated. was by using Brief Repeatable Battery of Neuropsychological Test (10/36 Spatial Recall Test, Symbol Digit Modalities Test, Paced Auditory Serial Test, Word List Generation Test), Beck Depression Inventory and Benedict Test.

Results: Of the 108 MS subjects who participated in the study, 69.4% (n=75) were female, while 30.6% (n=33) were male. Depression was detected in 19.5% (n=21) of the patients, and cognitive dysfunction was found in 41.7% (n=45). Depression and cognitive dysfunction were detected simultaneously in 13.9% (n=15) of the patients.

Discussion: Depression and cognitive dysfunction are not rare in patients with MS. A multidisciplinary approach is needed to treat the patients diagnosed with MS. *(Turkish Journal of Neurology 2013; 19:11-4)*

Key Words: Multiple sclerosis, cognitive dysfunction, depression, frequency

Özet

Amaç: Multipl skleroz (MS), mobilite ve fonksiyonel aktivitelerde değişik derecelerde özürlülüğe yol açan, kişinin sosyal ve meslek hayatında kısıtlamalara neden olarak ileri düzeyde engellilik yaratan ve yaşam kalitesini bozan bir hastalıktır. Hastaların büyük bir kısmında depresyon gözlenmektedir. Ayrıca kognitif fonksiyonlarda da bozulma (KFB) meydana gelmektedir. Bu çalışmanın amacı, MS'li hastalarda depresyon ve KFB sıklığını belirlemektir.

Gereç ve Yöntem: Bu amaçla MS tanısı konan 108 hasta değerlendirilmiştir. Bütün MS'li hastalara Brief Repeatable Battery of Neuropsychological Test (10/36 Spatial Recall Test, Symbol Digit Modalities Test, Paced Auditory Serial Test, Word List Generation Test), Beck Depresyon Testi ve Benedict Testi uygulanmıştır.

Bulgular: Çalışmaya katılan 108 MS olgusunun; %69,4'ü (n=75) kadın, %30,6'sı (n=33) erkektir. Hastaların %19,5'inde (n=21) depresyon, %41,7'sinde (n=45) ise KFB tespit edilmiştir. Hastaların %13,9'unda (n=15) ise hem depresyon ve hem de KFB gözlenmiştir.

Sonuç: Multipl sklerozlu hastalarda, depresyon ve kognitif fonksiyonlarda bozulma sık karşılaşılabilen durumlardır. Bu hastaların tedavisinde, multidisipliner bir yaklaşım gerekmektedir. *(Türk Nöroloji Dergisi 2013; 19:11-4)*

Anahtar Kelimeler: Multipl skleroz, kognitif fonksiyon bozukluğu, depresyon, sıklık

Address for Correspondence/Yazışma Adresi: Emine Bilgin MD, Elmadağ State Hospital, Neurology Klinic, Ankara, Turkey
Phone: +90 312 475 48 91 E-mail: dreminebilgi@gmail.com
Received/Geliş Tarihi: 13.11.2012 **Accepted/Kabul Tarihi:** 23.01.2013

Introduction

Multiple sclerosis (MS) is a chronic disease that progresses with attacks and remissions, causes physical disability, and affects the young population (1). Studies investigating the association of quality of life (QoL) and health in multiple sclerosis have found that QoL scores are lower in MS patients than in healthy individuals and patients with another chronic medical-neurological condition (2).

Psychiatric disorders are very frequently seen in multiple sclerosis (3). Depression is the most commonly seen psychiatric disorder, and is claimed to be fairly higher in MS patients than in the general population and other chronic diseases (4). Studies in multiple sclerosis patients report the lifelong incidence of major depression to be around 22.8-54% (5,6).

Evaluations performed with neuropsycological tests show that 40=65% of MS patients have cognitive dysfunction. On the other hand, outpatient follow-up or bedside examinations can reveal disorders in only 5% of the patients (7). Cognitive dysfunction (CDF) is an important factor that has a negative on the daily life activites and work productivity of the individual, independent of the physical disability due to the disease (8-10). However, it is usually disregarded and usually underdiagnosed due to the inadequacy of classic scales used in the outpatient clinic and bedside evaluations in this area, and the fact that both the patient and the physician attach more importance to the physical disability caused by the disease (11).

Material and Method

One hundred and eight (108) patients enrolled in this study had a confirmed diagnosis (based on McDonald diagnosis criteria) of MS and were under follow-up at the Firat University Medical School Neurology Clinic MS Outpatient Clinic. All patients were enrolled in the study after Ethics Committee approval was obtained and they had provided informed consent.

Inclusion criteria for patients were as follows:

1- MS diagnosis for at least 1 year prior to enrollment,

2- Currently be in remission stage,

3- EDSS score = 0.5 - 5.0.

Patients enrolled in the study were those who had presented at our MS outpatient clinic, fulfilled study criteria, and volunteered to have investigations performed. Patients who had received attack treatment (methyl prednisolone) within 3 months prior to study enrolment were excluded from the study. After the disease history and sociodemographic characteristics of the enrolled patients were collected, their most recent EDSS scores were determined. All neuropsychological tests were administered by a psychologist trained in this field. Finally, each patient was administered a Brief Repeatable Battery of Neuropsychological Test (BRB-N), Beck Depresyon Test and Benedict Test.

1- Brief Repeatable Battery of Neuropsychological Test (BRB-N) was developed by the Multiple Sclerosis Cognitive Function Study Group to assess cognitive function in MS (12), and modified by Rao et al. (13). Consists of four tests:

A- 10/36 Spatial Recall Test: This test includes visiospatial learning and delayed remembering (14).

B- Symbol Digit Modalities Test: This test measures perceivable course and attention (15).

C- Paced Auditory Serial Addition Test (PASAT): This test measures the rate or progress of information and attention power (16).

D- Word List Generation Test: This test measures semantic improvement and production (17).

2- Beck Depression Inventory (BDI) was developed by Beck in 1961 as a scale to be completed by the patient and consisting of 21 sentence groups to quantify the depressive symptoms perceived by the patients and identify the patient's depression in a cognitive manner. It is recommended for MS patients as a screening for depression because it is brief and distinguishes between neurologic symptoms (18). Patients scoring 18 and above are diagnosed with depression following a psychiatry consultation.

3- Benedict Cognitive Self Report Test (BCSRT) is a test developed by Benedict et al. that evaluates cognitive functions with 15 distinct questions (19).

Initially the patients were administered the Beck Depression Inventory, and those who had depression were identified. BCSRT was administered to assess complaints on cognitive involvement. Finally, BRB-N Tests (10/36 Spatial Recall Test, Symbol Digit Modalities Test, Word List Generation Test and Paced Auditory Serial Addition Test) were administered to evaluate cognitive involvement in patients. Patients who scored lower than 50% in any of the BRB-N tests administered in multiple sclerosis patients were considered to have cognitive dysfunction (13).

Statistical Methods

Analyses of the data obtained in the study were performed using SPSS for Windows 10.0 statistical software. Distribution of measurable data was evaluated with one-sample Kolmogorov-Smirnov Test. One-Way ANOVA test was used to analyze the differences between groups. Values were expressed as mean±standard error (SE). Significance level was set at $P \leq 0.05$ for all statistics.

Findings

Of the 108 MS patients 75 were women (69.4%) and 33 were men (30/6%), and their overall average age was 36.58±1.53 (range 22-62). Among the MS patients, 77.8% (n=84) had relapsing remitting MS (RRMS), whereas 22.2% (n=24) had secondary progressive MS (SPMS). The average disease onset age of the enrolled patients was 29.58±1/25.

The patients were classified in 4 groups, based on the tests administered to them:

1. MS patients who did not have depression or CDF (healthy)
2. Patients who only had depression (D)
3. Patients who only had cognitive dysfunction (CDF)
4. Patients who had cognitive dysfunction and depression (CDF+D)

Depression was found in 19.5% of the patients. Depression rate was 9.1% (n=3) in men and 24.0% (n=18) in women. None of the patients with depression had severe depression. As a result of the risk analysis performed to identify the association between sex and depression, difference in sex was not found to be a statistically significant risk for depression.

Average age was 42.00±4.48 for MS patients with depression

and 35.28±1.50 for those without depression. Statistical analysis showed that age did not have a significant effect on depression (P>0.05).

Duration of disease was 9.00±2.13 years in MS patients with depression, and 6.52±0.76 years in those without. Statistical analysis showed that duration of disease did not have a significant effect on depression (P>0.05).

Mean EDSS score of MS patients with and without depression was was 3±0.36 and 1.88±0.22, respectively. t-test analysis showed that EDSS scores were significantly higher in patients with depression (P≤0.05).

BRB-N Test results demonstrated that 41.7% of the patients, 54.6% of the male patients (n=18) and 36.0% of the female patients (n=27) had CDF. Table 1 shows test results for patients in detail. Risk analysis performed to identify the relationship between sex and CDF revealed that sex difference did not create a statistically significawnt risk for cognitive dysfunction.

Average age of MS patients with and without cognitive dysfunction was 40.67±2.60 and 33.67±1.60, respectively. Statistical analysis showed that age had a significant effect on CDF (P≤0.05).

Duration of disease in MS patients with and without cognitive dysfunction was 6.60±1.14 and 7.29±0.99, respectively. Statistical analysis revealed that duration of disease did not have a significant effect on CDF (P>0.05).

Mean EDSS score of MS patients with and without cognitive dysfunction was 2.77±0.30 and 1.62±0.23, respectively. t-test results revealed that EDSS scores were significantly higher in patients with CDF (P≤0.05).

We found that 13.9% of patient concurrently had depression and cognitive dysfunction. Among these patients, 9.1% (n=3) were men, and 16.0% (n=12) were women.

Discussion

In this study we aimed to determine the frequency of depression and CDF in patients with RRMS and SPMS.

Ron and Logsdail compared the rate of psychiatric morbidity rate in a physically disabled control group and 116 MS patients in their study and found that psychiatric cases increased significantly in the MS group (20).

Criteria used to diagnose depression and assess its severity vary widely. There is no standard consensus among investigators to diagnose depression in patients with multiple sclerosis. Aikens et al. recommend BDI to assess depressive symptoms in MS patients (21). We used BDI to diagnose depression in our study, and consequently found depression in 19.5% of the patients following psychiatric consultation. This rate was found to be 21.4% in the Soyuer et al. study (22). Age, sex and duration of disease was not different in groups with or without depression in multiple sclerosis patients. The fact that there was no increase in the diagnosis of depression may be explained with our patients developing coping mechanisms with the disease and consequences in time. Studies investigating an association between depression and duration of disease have reported varying and opposite results (23,24). In the study Mendes et al. conducted with 84 RRMS patients, and using BDI and EDSS, they found that there was a correlation between depression and disability, but there was no association between depression and sex, age and duration of disease (24). In the study Iwasaki et al conducted in 48 MS patients, there was no correlation between depression and disability (25). In our study, similari to that of Mendes et al,. there was a positive correlation between EDSS and depression (24).

Several tests have been developed to evaluate cognitive functions in multiple sclerosis. One of them is the BRB-N Test. In our study 41.7% of the patients were found to have CDF. In the study Portaccio et al. conducted using BRB-N Tests, the rate of cognitive involvement in 116 RRMS patients was found to be 44.8% (26). Sex and duration of disease in multiple sclerosis patients were not different between the groups with and without CDF. CDF was seen to increase as patients' age increased. Peyser et al. claimed in their 1980 study that there is an association between cognitive involvement and duration of disease and cognitive impairment is one of the late stage symptoms of the disease (27). However, in later studies, cognitive involvement was shown to occur in very early stages of the disease (28,29). Amato et al. showed in MS patients they had been monitoring for 10 years that cognitive impairment rate was around 56%, and the impairment was affected by factors including form of disease, late age, and physical disability (29). Schultheis et al., in a study conducted with 28 MS patients, reported that MS patients without physical disabilities could experience cognitive disorders, as well (30). The tests administered on our patients showed them to be affected particularly in attention, recall, visiospatial learning and information production points.

Benedict Cognitive Self Report Test is a test that the patient can self administer, and that evaluates cognitive involvement in MS. Studies have established its sensitivity and specificity in determining cognitive involvement to be 80% and 68%, respectively (19). Higher scores show cognitive impairment to be more severely affected. In our study the BCSRT was not found to be effective to determine cognitive involvement.

In this study we determined that there is no association between sex, patient's age and duration with depression. On the other hand, we observed that as the patient's disability increases

Table 1. Test Results for Patients

	BDI	SRT	SDMT	PASAT	WLGT	BCSRT
Healthy	8.12±0.89	7.23±0.65	7.71±0.85	77.90±6.74	5.83±0.87	5.16±0.81
D	21.06±2.22*#	8.74±1.75#	5.73±0.68*#	58.23±5.78*#	6.05±1.94	15.36±1.94
CDF	7.91±1.15	4.96±0.62*	2.66±0.38*	33.56±4.51*	4.68±0.74	5.38±0.92
CDF+D	25.20±2.97*#	6.13±0.25	4.00±1.18*	24.00±9.83*	4.33±0.35	12.20±3.51

(BDI: Beck Depression Inventory, SRT: 10/36 Spatial Recall Test, SDMT: Symbol Digit Modalities Test, PASAT: Paced Auditory Serial Addition Test, WLGT: Word List Generation Test, BCSRT: Benedict Cognitive Self Report Test)

(* Significant compared to healthy group, P≤0.05; # significant compared to the CDF group, P≤0.05)

the risk of developing depression increases. While there was no association between sex and duration of disease with CDF in multiple sclerosis patients, we observed that as age and disability increased CDF increased, as well. In conclusion, a detailed and careful neurological and psychiatric evaluation, diagnosing and treating depression and CDF in MS patients may positively affect the quality of life of patients.

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