Correlation between the fatigue with gender, age and disease durationin multiple sclerosis patients

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Abstract: Fatigue is one of the most symptoms and main causes of impaired quality of life in multiple sclerosis (MS)patients.The aim of this study is to determinationrelationship between fatigue with gender, age and disease duration in MS patients. A descriptive, cross-sectional, designed survey was undertaken.Patients' demographic information collectedandaskedthem to complete Visual Analogue Scale of fatigue status on the 'day of assessment' (VAS-F) and theFatigue Impact Scale for Daily Use(D-FIS)questionnaire.Data were analyzed by using SPSS software (version 16.0).Our study included 57 MS patients with mean age of 33.42±8.21 years**.** Female to male ratio was 2.56. The mean age of the MS onset was 29.58±7.51 years. The duration of MS disease was 3.80±3.35 years. 52 patients (91.22 %) reported fatigue. The mean±SD of VAS-F score was 46.14±25.96mm. We observed a significant positive correlation between VAS score with MS duration (r=0.301, P=0.003) and age of MS onset (r=0.216, P= 0.022). Mean of D-FIS score was 12.75±8.68. Male patients has a significant higher D-FIS score (17.50±9.65 *vs.* 10.90±7.62) (P=0.009). We observed a significant positive correlation between the D-FIS score with MS duration (r=0.237, P=0.027), age of MS onset (r=0.347, P= 0.008) and gender (r=0.345, P=0.009).

The age of onset disease, disease duration and male gender have a positive significant correlation with higher fatigue impact in multiple sclerosis patients.

Keywords: : Multiple sclerosis, Fatigue, D-FIS, VAS-F

1. Introduction

Multiple sclerosis (MS) defined as a chronic progressive inflammatory demyelinating disease of the brain and spinal cord (1). MS global incidence is 2.5 per 100,000 individuals per year and its prevalence estimated to be over than 2.5 million in the worldwide (2, 3). MScauses the Focal neurological symptoms such as loss or alteration of sensation, motor function, visual symptoms such as blurred vision or transient blindness, disturbance of conjugate eye movements, bladder and bowel dysfunction and cognitive impairment (1).This disease ismajorcause of the non-traumatic neurological disability in young adults andaffects females more than male (2–3:1) (1,4). Patients with MS have lifelong disease and need medical and rehabilitative care for all of their life (1).

One of the most symptom that reported by MS patients is fatigue. This symptom is one of the main causes of impaired quality of life in MS patients, autonomous of depression or disability (2).Fatigue reported by at least 75% (between 50% and 80%) of MS patients (5-7).In many patients, fatigue is single most debilitating and chronic symptom and over two-thirds of MS patients characterize it as their most troubling symptom (8,9).This condition causes the significant socioeconomic consequences, such as loss of work hours and in some time, loss of employment (10).Fatigue in MS patients may be multifactorial included immunologic abnormalities, increased prevalence of depression and several sleep disorders (2).

The aim of this study is to determination relationship between fatigue with gender, age and disease duration in MS patients.

2. Material and Methods

A descriptive, cross-sectional, designed survey was undertaken. Recruitment to the study was done among people living in SariCounty in north ofIran who were registered in the Mazandaran MS register.Patients with 18 years old age and over were included in the study. Our excludedcriteria included: administrated patients at the time of observation,major acute comorbidities 3months before study or any serious chronic illness, any other neurological illness, participated in any clinical trials in the preceding three months, and any kind of inability to respond the questionnaires (severe cognitive deterioration, illiteracy) (11).

Patients' demographic information such as age, sex and disease duration collected by their record profile in MS register center.Then, we ask the patients to

complete Visual Analogue Scale of fatigue statuson the 'day of assessment' (VAS-F) and theFatigue Impact Scale for Daily Use(D-FIS)questionnaire (12).The D-FIS is retrieved from Fatigue impact scale (FIS) to capture daily changes in the impact on daily life attributable to fatigue, whether from treatment or co-morbidity (11, 12). The FIS is a specificappliance that use when the fatigue is a leading chronicsymptom and has been shown to be a helpful andvalid measure in a diversity of medical conditions,such as MS (11-13).The D-FIS is an eight-item self-report questionnaire andeach item hasfive options for response (from 0=/noproblem, to 4=/extreme problem). The total score isderived from the sum of the ordinal scores obtainedfor each item and the higher scores reflect greaterfatigue (11, 12).

Data Analysis:

Data were analyzed by using SPSS software(version 16.0). The descriptive statistics were used for numbers and percents, median, mean and standard deviation (SD). Associations between variables were tested by Pearson's or Spearman's correlation calculations. Differences between groups were tested with the Chi-square test nominal data and Student's *t*-test for interval data.

3. Results

Our study included 57 MS patients with mean ± SD age of 33.42±8.21 years and range between 17 to 56 years. Out of them, 16 (28.1%) were men with mean age of 33.93±7.49 years and 41 (71.9%) were women with mean age of 33.21±8.55 years (P=0.77). Female to male ratio was 2.56. The mean ± SD age of the onset of MS (time of diagnosis by medical professionals) in all patients was 29.58±7.51 years. The duration of MS disease was 3.80±3.35 years and in 5 (8.8%) of the patients was under one year, between one and four years in 37 (64.9%) of them and more than four years in 15 (26.3%) of them. Disease duration was almost the same between two gender (P=0.60). Of the 57 patients, 52 (91.22 %) reported fatigue and completed the VAS-F and D-FIS scores. The mean±SD of VAS-F score was 46.14±25.96mm (median=50mm). This score in women was 44.14±25.78 (median=50) and in men was 51.25±26.55 (median=50) (P=0.35). We observed a significant positive correlation between the MS duration and VAS-F score (r=0.301, P=0.003) and between the age of MS onset and VAS-f score (r=0.216, P= 0.022). Mean ±SD of D-FIS score was 12.75±8.68 (median=13). Male patients has a significant higher D-FIS score (17.50±9.65 *vs.* 10.90±7.62) (P=0.009). We observed a significant positive correlation between the MS duration and D-FIS score (r=0.237, P=0.027), age of MS onset and D-FIS score (r=0.347, P= 0.008) and between gender with D-FIS score (r=0.345, P=0.009).

Table 1.Descriptive statistics of fatigue measures

D-Fatigue Impact Scale	Mean±SD (Median)	P value
Less alert Male Female	1.43±1.30 (2) 2.93±1.23 (2) 1.24±1.29 (1)	P=0.072
Reduced workload Male Female	1.75±1.37 (2) 1.93±1.56 (2) 1.68±1.31 (2)	P=0.53
Less motivated Male Female	1.68±1.39 (2) 2.37±1.45 (3) 1.41±1.28 (1)	P=0.018
Physical effort Male Female	1.82±1.25 (2) 2.18±1.27 (2.5) 1.68±1.23 (2.0)	P=0.17
Making decisions Male Female	1.38±1.37 (1) 2.12±1.54 (2.5) 1.09±1.2 (1.0)	P=0.01
Finishing tasks Male Female	1.54±1.36 (1) 2.31±1.30 (2) 1.24±1.28 (1)	P=0.007
Slow thinking Male Female	1.42±1.28 (1) 1.87±1.25 (2) 1.24±1.26 (1)	P=0.09
Physical activities Male Female	1.85±1.30 (2) 2.25±1.48 (2.5) 1.70±1.20 (2.0)	P=0.15
Total score Male Female	12.75±8.68 (13) 17.50±9.65 (21) 10.90±7.62 (10)	P=0.009

4. Discussions

National statistics of 2010-2011 shows that rate of Across the symptoms such as weakness, paresthesias, visual changes, spasticity, cognitive dysfunction, ataxia, and fatigue in MS patients, Fatigue considered as one of the most common important debilitating symptom (14).

Between our patients that suffering from MS, Female to male ratio, mean age of onset disease and

prevalence of fatigue was similar to other studies (7, 15, 16).

In this study, we observed a significant positive correlation between VAS-F and D-FIS scores with MS duration and patients age of MS onset. In contrast with our study, in some studies, age has been found to have no association with fatigue in MS patients (17, 18). But,Lerdal et al. showed a positive correlation between fatigue with age (r=0.20, P=0.001) and time since disease onset (r=0.11, p=0.05) in their study (19).

The age of onset disease and disease duration in this study no difference between male and female, but male patients have significant higher D-FIS score. Its show the men suffered from fatigue more than women. Furthermore, we observed significant correlation between the gender and D-FIS score. There are much incoherence when searching for a relationshipbetween demographic factors and fatigue in MS (1).Tola et al. expressed there was no difference between men and women in their perception of fatigue (20). Similar to Tola et al., Mills et al. also suggested no significant difference in mean fatigue estimates between the sexes (21). But, Fjeldstad et al. showed the men have significantly less fatigue score. However, in contrast with their studeis, Tedeschi et al.suggested that female sex may play aprotective role against fatigue (22).

The age of onset disease, disease duration and male gender have a positive significant correlation with higher fatigue impact in multiple sclerosis patients.

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