

ASSESSMENT OF CHRONIC FATIGUE IN PATIENTS WITH FIBROMYALGIA

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Abstract. *Fibromyalgia (FM) is characterized by chronic widespread pain lasting for a minimum of three months and pain at mechanical pressure in at least 11 of the 18 tender points. Four treatment groups with FM patients and a healthy control group were followed within 3 months in the Clinic of Rheumatology, Sofia. Fatigue in FM was assessed using the Chronic Fatigue Scale (FSS) and the Modified Fatigue Scale (MFIS). The results obtained have practical significance and provide the conviction to investigate the accompanying symptoms in FM, to consider the relationship between them and to observe their complex response to the treatment.*

Key words: *fibromyalgia, fatigue, clinical manifestations*

INTRODUCTION

Hippocrates first described diffuse musculo-skeletal pain. Since the mid-20th century, scientists have been looking for a connection between diffuse muscle pain, headache, fatigue, unrefreshing sleep, and mental stress [8]. In 1990, the American College of Rheumatology (ACR) diagnostic criteria for fibromyalgia (FM) were introduced. FM is characterized by generalized pain persisting for more than 3 months, which is spontaneous, diffuse, prolonged, and unexplained; pain with mechanical pressure in 11 of 18 points. The pain threshold at these points should be less than 4 kg/cm² pressure [10]. The clinical picture of FM is very diverse. One of the most common symptoms is chronic fatigue. It is present in the morning upon waking, sometimes present until the afternoon, accompanied by a feeling of morning stiffness. When fatigue is accompanied by fatigue during physical exertion, it is minimal and worsens the general condition of the patient [2].

CLINICAL CONTINGENT AND METHODS

The present study is prospective and was performed at the Rheumatology Clinic of the University Hospital "Sv. Ivan Rilski" and the Medical Center "Focus 5", Sofia. The studied patients were divided into 4 therapeutic groups, treated with different medications - trazodone, pregabalin, mydocalm and tizanidine for 3 months, 1 group of untreated patients and 1 control group of healthy individuals [1]. Table 1 presents the demographic characteristics of the treated patients, and Table 2 presents the demographic characteristics of the healthy subjects. The patients did not differ from the healthy subjects in terms of demographic characteristics.

Table 1. Demographic characteristics of patients with FM

Demographic characteristics	Values
Number of patients	97
Number (% women)	86 (88.5%)
Female:male ratio	8:1
Age (years), mean±SD (standard deviation) rank	20-71; 46.5±11.4
Duration of FM (years)	1-44; 6.1±8.68
Mean age at onset of complaints (years) ± SD (standard deviation) rank	19-63; 40.5±11.3

Table 2. Demographic characteristics of healthy individuals

Demographic characteristics	Age
Number of healthy	39
Number (% women)	38 (97.44%)
Age (years), mean ± SD (standard deviation) rank	21-70; 45.8±13.73

Methods

1. Anamnesis and examination of the patients. In the anamnesis of the patient, special attention was paid to the duration of FM, the etiological factors for the occurrence of FM, the social employment and education of the patient, the presence of fatigue, tension-type headache, sleep disorders and autonomic disorders.

2. Measurement of pain threshold at 18 points for the diagnosis of FM. The change in pain threshold at all painful points was precisely monitored with dolorimetry, measured in kg/cm² with a Fisher dolorimeter.

3. Fatigue assessment. Fatigue was assessed using the Fatigue Severity Scale (FSS) and the Modified Fatigue Impact Scale (MFIS). The Modified Fatigue Impact Scale consists of physical, cognitive, and psychosocial subscales. It consists of 21 ques-

tions, which are scored by the patients. These questions serve to assess changes in physical activity, cognitive functions, and social contacts.

4. Paraclinical methods – exclude active inflammatory and systemic disease by examining laboratory parameters.

5. Statistical methods – ANOVA, factor analysis, correlation analysis, Paired Samples Test. Statistical processing of the data was performed using the statistical software program SPSS-13.0 [1].

RESULTS

1. Results of fatigue dynamics

Figure 1 presents results of fatigue dynamics – reduction in its intensity after a 3-month treatment period in 4 therapeutic groups, compared with a group of healthy individuals.

The effect of the fatigue indicator in patients treated with tizanidine was 0.73, 16%, $p = 0.19$ (before treatment – arithmetic mean value $\pm$ standard deviation 4.57 ± 1.65 , min. 1, max. 7, after treatment 3.84 ± 1.78 , min. 1, max. 6); trazodone was 0.85, 15.7%, $p = 0.047$ (before treatment 5.4 ± 1.33 , min. 2, max. 7.5, after treatment 4.55 ± 1.32 , min. 1.8, max. 6.3); with pregabalin – 0.47; 10%, $p = 0.34$ (before treatment 4.63 ± 1.82 , min. 1, max. 7, after treatment 4.16 ± 1.71 , min. 1, max. 7); with mydocalm – 0.37, 9%, $p = 0.52$ (before treatment 4.21 ± 1.87 , min. 1, max. 7, after treatment 3.87 ± 2.14 , min. 1, max. 6). The average value of fatigue in healthy peo-

ple is 3.726. There is no statistically significant difference in the average values for the fatigue indicator.

Administered to reduce fatigue, the medications are arranged in the following order: tizanidine, trazodone, pregabalin, and mydocalm. With their anxiolytic effect on the CNS, tizanidine and trazodone have similar and superior effects to other drugs. They are the drugs of choice for patients with FM with accompanying fatigue in practical work [1].

2. Results of the dynamics of chronic fatigue according to MFIS

The dynamics of chronic fatigue were studied using a modified fatigue scale. There is no statistically significant difference in the effect of medications on chronic fatigue. MFIS has three subscales. The first subscale is the physical – the score ranges from 0 to 36 points (MFIS-physical subscale). It shows the results of the patient's physical activity and working capacity in everyday life. In patients treated with mydocalm, the reduction in fatigue was 3.45; 16.7%; $p > 0.05$; with tizanidine it was 4.067; 16.2%, $p > 0.05$; with trazodone it was 1.96, 9%, $p > 0.05$, in the group with pregabalin – 2.52; 9%; $p > 0.05$. The average fatigue value in healthy people was 10.5.

For the fatigue indicator, a statistically significant difference in the mean values was observed between the healthy patients and all groups of patients; there was no statistically significant difference before and after treatment in the individual groups on the MFIS-physical subscale.

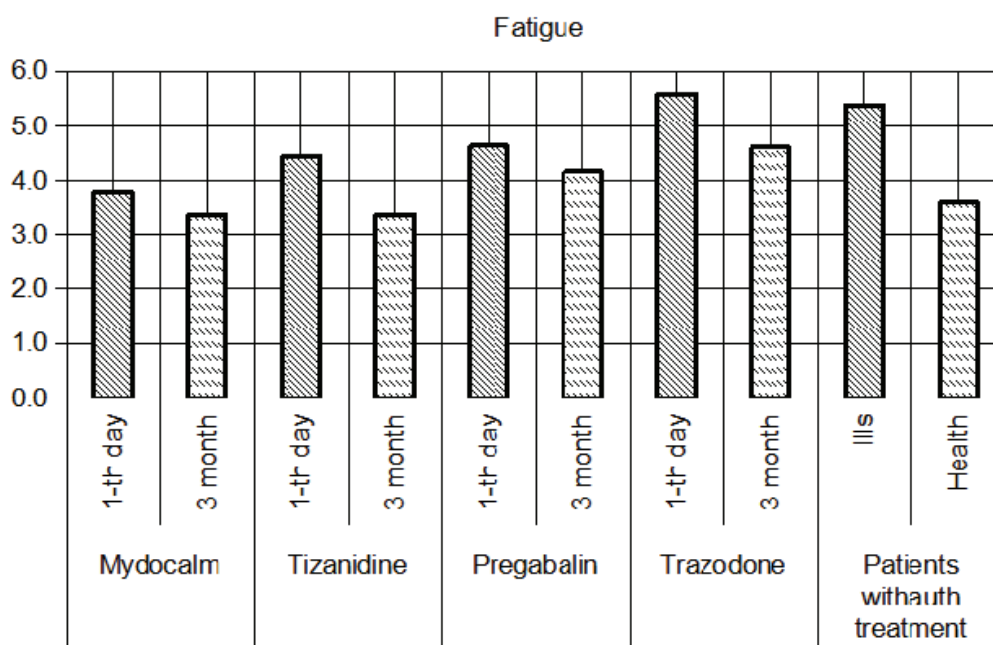


Fig. 1. Fatigue dynamics in patients with fibromyalgia and healthy individuals

The second subscale is the psychosocial – the score ranges from 0 to 8 points. This scale presents the results of the patient's opportunities for contact and social activity in society. The reduction in fatigue on the psychosocial subscale in patients treated with mydocalm was 0.54; 11%; $p > 0.05$, in the group with pregabalin – 0.43, 10%, $p > 0.05$; with tizanidine – 0.32; 7.5%; $p > 0.05$, with trazodone – 0.09, 2%, $p > 0.05$. The average value of fatigue in healthy people is 2.74. According to the indicator fatigue on the psychosocial subscale, a statistically significant difference in the average values is observed between healthy people and all groups of patients.

The third subscale is cognitive (from 0 to 40 points). It presents the results of the patient's cognitive function capabilities. The impact of fatigue on the cognitive subscale in patients treated with tizanidine was 2.23; 13.7%, $p > 0.05$, with trazodone – 1.52; 9.5%, $p > 0.05$, with mydocalm – the reduction in fatigue was 0.49; 3.5%, $p > 0.05$, in the group with pregabalin – 0.18; 1%, $p > 0.05$. The average fatigue score in healthy subjects is 10.63. According to the fatigue score on the cognitive subscale, a statistically significant difference in the average values is observed between healthy subjects and all groups of patients.

3. Percentage distribution of patients with fatigue.

Fatigue is the most difficult to treat in FM patients. Before treatment, 97.5% of all patients (treated and untreated) have fatigue. It is striking that only 3% of healthy people do not have fatigue, the remaining 97% complain of chronic fatigue. In the group of patients treated with tizanidine and pregabalin, all patients had fatigue at the beginning of treatment. After 3 months, fatigue was not completely affected in the group of patients treated with pregabalin. In the group treated with tizanidine, 9% of patients were fatigue-free after treatment. In the group of patients treated with mydocalm, before treatment 82% had fatigue, which decreased and after treatment another 13% of patients did not have fatigue. In the group of patients treated with trazodone, their number increased after treatment, although the average intensity of fatigue decreased (presented in graph 1). All untreated patients reported fatigue, but it was not tracked over time.

The analysis shows that the Bulgarian population – both FM patients and healthy people – suffer from chronic fatigue. The increasing stress and workload among the population and all factors for

the development of FM are causes leading to accompanying fatigue.

The results obtained show that mydocalm has the best effect on the complete elimination of fatigue, but only in a certain percentage of patients, followed by tizanidine. Muscle relaxants, by affecting muscle spasticity, have a positive effect on fatigue [1].

DISCUSSION

In our clinical development, fatigue is affected by all medications, but to different degrees. In clinical studies, the FIQ (Fibromyalgia Impact Questionnaire) is usually used. It is a complex questionnaire for fatigue, physical activity, anxiety, and depressive changes. It is combined and for each clinical complaint, there are on average 2-3 questions. This questionnaire is not sufficient to provide detailed information about each symptom. Therefore, our study included 2 questionnaires for fatigue (FSS and MFIS) and one questionnaire for the remaining symptoms with grades. The fatigue questionnaires have been applied in systemic lupus erythematosus and have been shown to be highly informative for this disease [6]. These facts led to the selection of the indicated questionnaires in FM for our population.

In an article by Chardran A [3], 9.5% of the group with mild FM, 53.1% of the group with moderate-severe FM and 43.6% of the patients with severe FM complained of chronic fatigue. According to the results of our observation, in the group treated with tizanidine and pregabalin, all patients had fatigue. After 3 months, it was not affected in patients treated with pregabalin. After treatment with mydocalm 13% of patients are fatigue-free, 9% – after tizanidine. It is important to note that 97% of healthy people have fatigue. The analysis shows that the Bulgarian population suffers from chronic fatigue. The results show that mydocalm has the best effect on fatigue in some patients, but not on the average degree of fatigue, followed by tizanidine. In practical work, it is necessary to consider muscle relaxants, and more specifically tizanidine, when patients report chronic fatigue. Tizanidine has been shown to affect the concentration of substance P in CSF and reduce the intensity of pain in FM [3, 4, 7]. As in the cited articles [3, 4], our FM patients have all the accompanying manifestations of FM – sleep changes and poor sleep, headache, heart palpitations, Raynaud's syndrome, and irritable bowel syndrome. All patients after treatment had a positive impact on clinical symptoms compared to the beginning [1].

According to Yacizi K. et al. [9], after pain, fatigue is the next most debilitating symptom, which worsens the quality of life of patients with FM. Other studies have noted a significant effect on the degree of fatigue after physical exercise and gymnastics [5]. Some studies have noted that the quality of life of patients with FM, related to pain and accompanying clinical complaints, is extremely low. Therefore, it is necessary to inform patients about their disease and to provide training in communication and maintaining a good quality of life. It is associated with an increase in the pain threshold as a result of treatment with medications or non-drug treatments. It is necessary to develop an individual treatment program and educate patients to influence all other complaints from FM. Therefore, primary care in the family is important for the success of treatment. Care by the employer and primary medical centers, increased pay, and socialization of these patients are essential for successful treatment [5, 9].

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