

# Fatigue severity scale, fibromyalgia impact questionnaire, and visual pain scale scores in patients with fibromyalgia

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## Abstract

**Aim:** This study aimed to evaluate and compare the clinical and laboratory results of antinuclear antibodies (ANA)-positive and ANA-negative patients. In addition, it is also intended to determine the fatigue severity scale (FSS), fibromyalgia (FM) impact questionnaire (FIQ), and visual pain scale (VAS) scores in patients with FM in terms of sex and to determine the correlation between them.

**Material and Methods:** A total of 97 patients with FM aged >18 years were included in this retrospective study. Clinical characteristics such as age, sex, and FSS, FIQ, and VAS scores of patients with adequate records and who received a diagnosis of FM through Fibromyalgia Questionnaire Diagnostic Criteria and Severity Scale were analyzed at the physical therapy clinic at our hospital.

**Results:** Of the 97 patients with FM, 88 (90%) were females and 9 (0.92%) were males. The mean age of the patients was  $36.71 \pm 9.11$  years. The mean age of ANA-positive patients was significantly higher than the ANA-negative patients ( $P = 0.011$ ). Mean level of Alkaline Phosphatase (ALP) in ANA-positive and ANA-negative patients was  $59.18 \pm 8.56$  and  $69.98 \pm 24.20$ , respectively, and the difference between them was significant ( $P = 0.006$ ). Mean FSS and VAS scores were  $57.66 \pm 4.89$  and  $6.33 \pm 0.86$  in males and  $55.77 \pm 5.69$  and  $6.63 \pm 0.84$  in females ( $P = 0.302$ ,  $P = 0.310$ ), respectively. Mean FIQ scores were significantly lower in females than in males ( $P = 0.034$ ). FSS had a strong positive correlation with VAS ( $r = 0.538$ ,  $P < 0.001$ ) and FIQ ( $r = 0.692$ ,  $P < 0.001$ ).

**Conclusions:** In conclusion, our study showed that an overwhelming majority of patients with FM comprise females, which is consistent with the literature. Mean FIQ scores were significantly lower in females than in males. In our study, the mean age of ANA-positive patients was significantly higher than that of ANA-negative patients. The FSS, VAS, and FIQ scores of ANA-positive patients were similar to those of ANA-negative patients.

**Keywords:** Fibromyalgia (FM); Antinuclear Antibody (ANA); Fatigue Severity Scale (FSS); FM Impact Questionnaire (FIQ); Visual Pain Scale (VAS).

## INTRODUCTION

Fibromyalgia (FM) is a chronic pain condition with an unknown etiology and indefinite pathophysiology. It is characterized by widespread pain, especially tendomuscular pain, and hypersensitivity to pain (1). Over the years, efforts have been made to develop diagnostic criteria for what we now know as FM. Multiple symptoms and comorbidities associated with FM make diagnosis difficult. In addition, a definitive diagnosis of FM has not been established, and a diagnostic treatment cannot be completely performed (2). Epidemiological studies have demonstrated that the patients with FM account for approximately 2%–4% of the general population, and it is observed in older females as well as males (3). The disease is accompanied by symptoms such as weakness,

fatigue, sleep disorders, and cognitive dysfunction (4). Pain and reduced physical capacity can lead to physical inactivity in these patients, thereby leading to reduced muscle strength. As a result, muscle weakening occurs in these patients (5).

This study aimed to evaluate and compare the clinical and laboratory results of antinuclear antibodies (ANA)-positive and ANA-negative patients. It is also aimed to determine the fatigue severity scale (FSS), FM impact questionnaire (FIQ), and visual pain scale (VAS) scores of patients with FM in terms of sex and to determine the correlation between them.

## MATERIAL and METHODS

The study was designed as a retrospective study. The study was approved by the ethics committee of Diyarbakir

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Gazi Yaşargil Training and Research Hospital (ethics approval date: 02/02/2018; no: 20).

A total of 97 patients aged >18 years with a primary headache who received a diagnosis of FM at the polyclinic of Health Science University Diyarbakir Gazi Yaşargil Training and Research Hospital, Neurosurgery and Physical Medicine, were included in the study. The diagnosis of FM was made on the basis of Fibromyalgia Questionnaire Diagnosis Criteria and Severity Scale (6). The age, weight, height, sex, diagnosis time, anamnesis, physical examination, and radiological imaging results of the patients were recorded, and the FSS, FIQ, and VAS scores of the patients with a fibromyalgia in their post-examination cards were reviewed.

Inclusion criteria: Patients aged >18 years with a primary headache who received a diagnosis of fibromyalgia. Exclusion criteria: Patients with a chronic disease, such as diabetes mellitus, hypertension, anemia, and cancer; patients with substance dependence such as cigarette and alcohol; and patients without adequate data in their files.

### Statistical calculations

SPSS 20 version was used for data analysis in the study. The mean and standard deviations of the demographic and laboratory data of the patients were calculated using descriptive tests. The Kolmogorov–Smirnov test was used to determine distribution of the data. Student's t-test was used to analyze continuous variables, and Chi-square test was used to analyze categorical data. Pearson's correlation test was used to determine correlation between the data. A p values of <0.05 was considered statistically significant.

## RESULTS

The 97 patients with FM included 88 (90%) females and 9 (0.92%) males, with a mean age of  $36.71 \pm 9.11$  years (min. 20, max. 55).

The mean age of ANA-positive patients was  $43.18 \pm 7.62$  years and that of ANA-negative patients was  $35.88 \pm 8.98$  years; the mean age was significantly higher in than that of ANA-negative patients ( $P = 0.011$ ). The mean Alkaline Phosphatase level was  $59.18 \pm 8.56$  and  $69.98 \pm 24.20$  in the in ANA-positive and ANA-negative patients, respectively, and the difference was significant ( $P = 0.006$ ). A comparison of the other laboratory data of ANA-positive and ANA-negative patients with FM is summarized in Table 1.

FSS, VAS, and FIQ scored were compared according to ANA-positive and ANA-negative status and sex (Table 3). Accordingly, FSS ( $P = 0.761$ ), FIQ ( $P = 0.100$ ), and VAS ( $P = 0.309$ ) scores were similar in ANA-positive and ANA-negative patients with FM (Table 2). In terms of sex, the mean FSS and VAS scores were  $57.66 \pm 4.89$  and  $6.33 \pm 0.86$  in males and  $55.77 \pm 5.69$  and  $6.63 \pm 0.84$  in females

( $P = 0.302$ ,  $P = 0.310$ ), respectively. The mean FIQ score was  $60.33 \pm 6.78$  in males and  $4.95 \pm 0.76$  in females and the difference was significant ( $P = 0.034$ ).

**Table 1. Clinical and laboratory features of patients with Fibromyalgia related to ANA positive and ANA negative**

Parameters	ANA Positive (11.3%,n=11) [Mean±SD]	ANA Negative (90.7%,n=88) [Mean±SD]	P*
Age(years)	43.18±7.62	35.88±8.98	0.011
HCT(%)	40.30 ±3.41	40.71±3.64	0.3711
WBC(103x/uL)	7.28±1.29	8.18±2.25	0.64
NEU(103x/uL)	4.43±0.99	5.06±1.79	0.095
MCV(fL)	87.05 ±4.60	86.03±5.37	0.511
PLT (103x/uL)	269.63± 72.07	283.70± 57.78	0.546
MPV(fL)	10.20±1.30	10.08 ± 1.13	0.764
Sedimentation(mm/h)	19.30±8.89	17.46± 11.61	0.562
Ca (mg/dL)	9.63± 0.35	9.31±1.16	0.082
Na(mmol/L)	139.25±1.50	139.0±2.76	0.788
K (mmol/L)	4.18±0.26	4.19± 0.32	0.923
Glucose (mg/dL)	96.49±6.87	93.61±28.14	0.214
Urea (mg/dL)	25.81±7.66	26.47±8.82	0.798
Creatinin (mg/dL)	0.58±0.09	0.62±0.13	0.205
ALB (gr/dL)	4.62±0.48	4.54±0.39	0.622
AST (U/L)	17.00±2.93	19.47± 9.96	0.081
AST (U/L)	13.90±6.78	17.94±10.11	0.101
ALP (U/L)	59.18±8.56	69.98±24.20	0.006
CK (U/L)	73.72±15.58	85.82±81.71	0.229
UA (mg/dL)	3.45±0.64	3.71±0.88	0.388
PH	3.19± 0.60	3.36±0.66	0.385
Hs-CRP (mg/dL)	2.15±2.20	2.45±3.08	0.696
RF (IU)	7.14 ±4.26	10.01±11.67	0.133

\* Student t test and Chi-square test.

ALT- Alanine Aminotransferase,AST- Aspartate Aminotransferase,Ca-calcium, CK-Creatine kinase, hs-CRP - high sensitive C reactive protein, K-Potassium,WBC- white blood cell,HCT- Hematocrit , NEU-Neutrophils, MCV-Mean Corpuscular Volume, PLT-platelet, MPV-Mean Platelet Volume, ALB-albumine,ALP- Alkaline Phosphatase, UA-Uric acid, RF – rheumatoid factor

**Table 2. Comparison of FSS, VAS and FIQ scores by gender in patients with Fibromyalgia**

	Male Mean±SD (n=9,%)	Female Mean±SD (n=88,%)	P
FSS	57.66±4.89	55.77±5.69	0.302
VAS	6.33±0.86	6.63±0.84	0.310
FIQ	60.33±6.78	4.95±0.76	0.034
	ANA Pozitif	ANA negatif	
FSS	55.36± 6.740	56.02± 5.51	0.761
VAS	6.36±0.80	6.63±0.85	0.309
FIQ	55.45±8.59	55.45±7.13	1.000

\* Student t test and Chi-square test. FSS-The fatigue severity Scala, FIQ-The Fibromyalgia Impact Questionnaire, VAS-Visual Analog Scala

In our study, FSS had a strong positive correlation with VAS ( $r = 0.538$ ,  $P < 0.001$ ) and FIQ scores ( $r = 0.692$ ,  $P < 0.001$ ). In addition, FSS had a moderate positive correlation with MPV ( $r = 0.198$ ,  $P = 0.065$ ) (Table 3).

## DISCUSSION

In terms of sex, an overwhelming majority of the patients included in our study were females. The mean FIQ score was significantly lower in females than in males. The mean age of ANA-positive patients was significantly higher than that of ANA-negative patients in our study. The mean ALP level was lower in ANA-positive patients than in ANA-negative patients. We also found that FSS had a strong positive correlation with VAS and FIQ.

Heterogeneity and demographic dynamics among clinical populations are important in understanding FM. In this study, the FM ratio was significantly higher in females than in males. The difference between the frequency of FM in males and females was reported to be approximately 2:1 (16.6% and 8.4%) (7). In general, while using the 1990 ACR criteria for scoring, the prevalence of FM in females and males was reported to range from 8:1 to 30:1 (3). Systemic symptoms, such as fatigue and irritable bowel syndrome commonly associated with FM, are known to occur more frequently in females with distinctly more sensitive spots. These differences lead to differences in prevalence according to sex. The reason for this difference remains unknown; however, it is known that various biological, psychological, and sociocultural factors contribute to this difference (8).

McLean et al. have demonstrated that traffic accidents can cause pathological stress that triggers subsequent FM development (9). Physical traumas, including traffic accidents, can therefore act as triggers for FM. This finding provides an important basis for a better understanding of FM pathogenesis and requires further investigation. As this was a retrospective study, some of the data were inadequate, and the association of FM with a traffic accident history was not evaluated. This was a limitation of our study.

The mean age of ANA-positive patients was significantly higher than that of ANA-negative patients in our study. The mean ALP level of ANA-positive patients was lower than that of ANA-negative patients. Treatment for FM has not been established; FM is mainly treated with symptom management. However, treatment is often difficult because the pathogenesis of FM is currently unknown. One possibility is an unrecognized, underlying autoimmune process. This explains why many patients with FM have autoimmune markers such as high ANA levels (10). In previous studies, FM was present in 65% of patients with systemic lupus erythematosus, in 57% of patients with rheumatoid arthritis, in 24% of patients with psoriatic arthritis patients, and in 62% of patients with Hashimoto thyroiditis (11-13). In our study, although there was no known patient with an autoimmune disease, 11 of 97 patients were ANA-positive. In addition, FSS, FIQ,

and VAS scores were similar in ANA-positive and ANA-negative patients. This does not imply that there was no autoimmune disease in any patient. However, this result of our study suggests that the presence of an autoimmune disease in these patients can be investigated. We also found that FSS had a strong positive correlation with VAS and FIQ.

There were undoubtedly important limitations of our study. The first one is that some of the data was insufficient as our study is a retrospective study. The second important limiting factor is that we do not have sufficient knowledge about the association of autoimmune disease with FM. The third important limiting factor is that we could not find any information in the patients' records with respect to whether or not they had experienced any trauma in their anamnesis, such as a traffic accident. The fourth limiting factor that can be considered important is the relatively low number of cases in the study.

## CONCLUSION

In conclusion, consistent with the literature, our study showed that a majority of patients with FM comprise females. The mean FIQ score was significantly lower in females. In our study, the mean age of ANA-positive patients was significantly higher. The FSS, VAS, and FIQ scores of ANA-positive patients were similar to those of ANA-negative patients. In our study, we also found that FSS has a strong positive correlation with VAS and FIQ. There is a need for more comprehensive clinical studies on FM.

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