The Association of Fibromyalgia with Adult Ankylosing Spondylitis Patients

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ABSTRACT:

BACKGROUND:

Ankylosing Spondylitis is a chronic systemic inflammatory disorder affecting the spine and other areas of the body(joints and entheses). Fibromyalgia is a syndrome characterized by chronic(more than three months) wide spread musculoskeletal pain. Detection of fibromyalgia in patients with ankylosing spondylitis is an important aspect in the treatment of ankylosing spondylitis.

OBJECTIVE:

To determine the association of fibromyalgia with adult ankylosing spondylitis, and to evaluate the effect of coexisting fibromyalgia on the scores of disease activity and functional status.

PATIENTS AND METHODS:

A case-control study with 100 ankylosing spondylitis patients and 100 controls enrolled in the study. Ankylosing spondylitis was diagnosed with modified New York criteria. Fibromyalgia assessed by using modified 2010/ 2011 American Collage of Rheumatology criteria for the diagnosis of fibromyalgia.

RESULTS:

Fibromyalgia was found in 25% of patients with ankylosing spondylitis with female: male ratio(5.2:1), while seen in 6% of controls with female to male ratio(5.9:1). Fibromyalgia was significantly associated with increase in the disease activity index. The function index in fibromyalgia patients was significantly higher than in non-fibromyalgia patients.

CONCLUSION:

Fibromyalgia is more common in ankylosing spondylitis patients than in controls. The coexistence of fibromyalgia with ankylosing spondylitis negatively impacts the scores of ankylosing spondylitis disease activity and functional status.

KEYWORDS: Fibromyalgia, Ankylosing spondylitis.

INTRODUCTION:

Ankylosing Spondylitis is a chronic systemic inflammatory disorder affecting mainly the axial skeleton, although peripheral joints, enthuses and extra-articular tissues may also be involved such as eyes, heart and lungs [(1)].Ankylosing spondylitis is more common in males, with a male : female ratio of 2:1 to 3:1. The peak age of onset in the second and third decade of life[(2)]. In the general population, approximately 1-2% of all peoples who are positive for HLA-B27 develop AS. This increases to 15-20% if they have a first-degree relative with HLA-B27 positive AS [(3,4)]. The estimated prevalence of AS in Iraq was 0.9 %, male was 90.6% with male to female ratio 9:1, and HLA-B27 was positive in 55% [(5)].

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Fibromyalgia is a disorder characterized by chronic (more than 3months), Wide spread musculoskeletal pain often associated with debilitating fatigue, un refreshing sleep, dyscognition, depression, and anxiety[(6)]. Fibromyalgia is present in as much as 2-8% of the population[(7)]. It is characterized by strong female predominance (female to male ratio about 9:1)[(8)]. It is approximately 1.5% in children across studies, and usually diagnosed in adolescent girls[(9)]. It appears to coexist sometimes with other rheumatic disorders such as rheumatoid arthritis, ankylosing spondylitis and systemic lupus erythematosus[(10)].

The concomitant presence of FM is associated with the symptoms of disease activity, functional impact and compromise the quality of life in patients with AS[(11,12)].

AIM OF THE STUDY:

To determine the association of FM with adult ankylosing spondylitis patients, as well as to evaluate the effect of coexisting FM on the scores of disease activity and functional status.

PATIENTS AND METHODS:

A total of 100 patients diagnosed with ankylosing spondylitis after fulfilling the modified New York criteria for ankylosing spondylitis were enrolled in the study[13]. There were 100 healthy controls matched for age and sex enrolled in this case control study. Data for AS included HLA typing, disease duration, family history of AS, modality of treatment, disease distribution(axial or peripheral). Disease activity was evaluated by using Bath Ankylosing Spondylitis Disease Activity Index score[14]. The cut-off value is accepted as 4 in BASDAI scale. Scores above cut-off value indicate more active disease . Functional status was evaluated by using Bath Ankylosing Spondylitis Functional Index score BASFI [15]. The higher the score, the more functional impairments. Fibromyalgia was evaluated by using data collection questionnaires derived from the modified 2010-2011 ACR preliminary diagnostic criteria[16].Data were entered and analyzed using the statistical package for social sciences (SPSS) version 24.

RESULTS:

FM was reported in 25 AS patients, (25%), with female to male ratio (5.2:1) and only 6 (6%) controls, with female to male ratio (5.9:1), (P< 0.001) (**Fig. 1**).

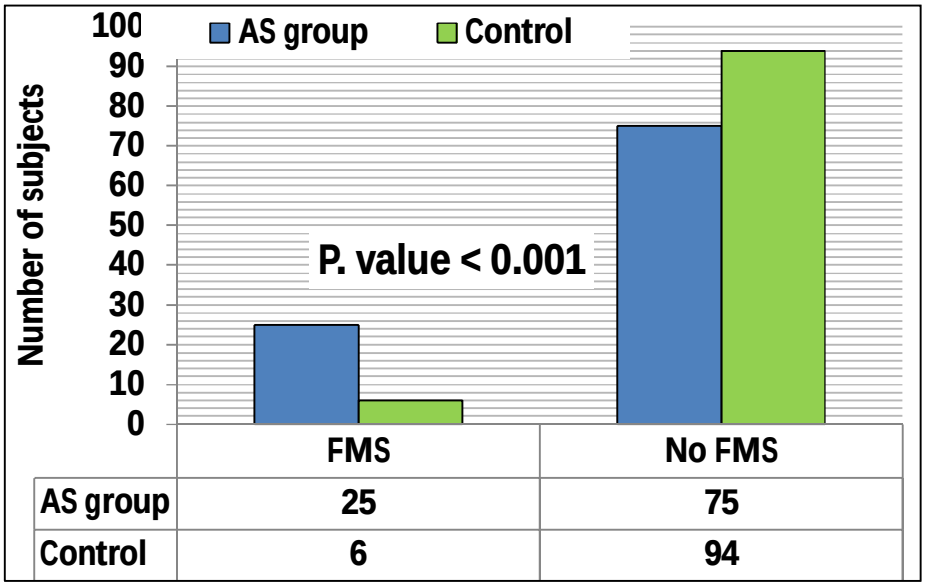

Figure 1. Distribution of FM among the studied groups

FM was significantly associated with disease activity, moderate and high disease activity were more frequent in FM than non-FM patients. (68%) and (16%) in FM patients compared to (8%) in non-FM group,

Table 1. Comparison of BASDAI of AS group according to the FM status

BASDAI	FM		No FM		Total
	No.	%	No.	%	
Inactive	4	16.0	63	84.0	**67**
Moderate	17	68.0	6	8.0	**23**
High disease activity	4	16.0	6	8.0	**10**
Total	25	25.0	75	75.0	**100**
***P. value*< 0.001**					

The mean BASFI of FM patients was (4.88 ± 1.51) vs. (2.65 ± 0.90), respectively, significantly higher than that of non-FM group, (P<0.001), (**Fig. 2**)

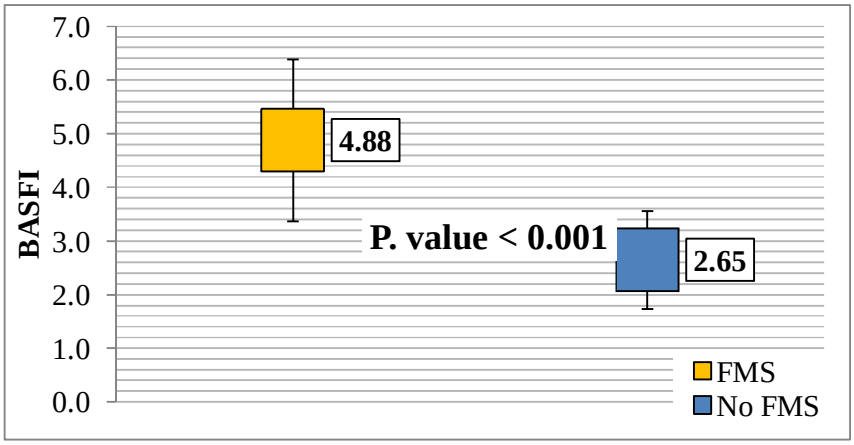

Figure2. Comparison of mean BASFI according to the FM status in AS group

Table 2. Results of Binary logistic regression for the correlation of BASDAI with FM and other variables in AS group

Variable	OR	95% C.I. for OR	P. value
Age (older)	1.02	0.92 – 1.14	0.69
Gender (female)	2.72	0.32 - 22.7	0.36
BMI (heavier)	0.95	0.81 – 1.12	0.57
Family history (positive)	0.87	0.11 – 6.66	0.89
Smoking (current)	**2.43**	1.03 – 5.76	**0.042**
HLAB27 (positive)	**2.97**	1.26 – 7.04	0.021
ESR (high)	**1.18**	1.07 – 1.29	**0.001**
Duration (longer)	0.57	0.21 – 1.50	0.25
Mode of Treatment (anti TNF)	1.15	0.03 – 39.92	0.94
Axial disease (present)	2.63	0.21 – 32.29	0.45
Peripheral disease (present)	1.25	0.62 – 2.50	0.53
FM (present)	**10.56**	3.98 – 28.53	**< 0.001**

OR=odd ratio, BMI=body mass index, ESR=erythrocyte sedimentation rate, TNF= tumor necrosis factor FM= fibromyalgia, C.I=confidence interval.

Table 3. Results of Binary logistic regression for the correlation of BASFI with FM and other variables in AS group

Variable	OR	95% C.I. for OR	P. value
Age (older)	1.01	0.98 – 1.05	0.49
Gender (female)	**2.09**	1.08 – 4.04	**0.03**
BMI (heavier)	1.05	1.00 – 1.11	0.35
Family history (positive)	2.87	1.54 – 5.35	0.04
Smoking (smoker)	**1.19**	0.82 – 1.71	< **0.001**
HLAB27 (positive)	**2.21**	1.41 – 3.84	< **0.001**
ESR (high)	0.99	0.96 – 1.01	0.30
Duration (longer)	1.03	0.79 – 1.35	0.82
Mode of Treatment (anti TNF)	0.79	0.29 – 2.13	0.64
Axial disease (present)	**2.45**	1.18 – 5.09	**0.02**
Peripheral disease (present)	1.13	0.90 – 1.43	0.28
FM (present)	**7.17**	4.01 – 12.94	< **0.001**

OR=odd ratio, HLA=human leukocyte antigen, ESR=erythrocyte sedimentation rate, TNF=tumor necrosis factor, FM=fibromyalgia, p.value= probability value.

DISCUSSION:

Fibromyalgia is a well-known secondary feature of many rheumatic diseases, but its role in spondyloarthropathy had not been studied in depth [17]. In this study, FM was significantly associated with increased disease activity, moderate and high disease activity were more frequent in FM than non-FM patients, (68%) and (16%) in FM patients compared to (8%) in non-FM group, respectively (**table 1**).

The correlation between BASDAI and FM still significant after adjustment for the other variables, (P<0.001), with an odds ratio of (10.56) indicated that patients with FM were about 10 folds more likely to have active disease compared to FMS free group(**table 2**). The (BASDAI)index; a self-reported index; is the main parameter used to assess disease activity in AS, and it is based on subjective reporting of fatigue, stiffness, pain, and tenderness, all well-known symptoms of FM [11], making interpretation of disease activity and treatment response in AS patients with concomitant FM very challenging and a diagnostic dilemma, and suggests that coexistence of FM should be carefully screened when initiating and/or evaluating treatment effect and in the presence of severe disease activity in patient-reported scores[18].

However, other variables and parameters help to differentiate AS from coexisting FM, BASDAI was significantly associated with ESR level, (OR = 1.18), (P. value = 0.001), indicates that patients with high ESR were more likely to have higher disease activity.

The mean BASFI of FM patients in this study was significantly higher than that of non-FM group, (4.88 ± 1.51) vs. (2.65 ± 0.90), respectively (**Fig. 2**). The correlation between FM and BASFI was still significant after adjustment of other variables (OR = 7.17), indicates that patients with FM were about 7 folds more likely to have higher BASFI than non-FM patients(P<0.001), **(table3)**.

CONCLUSIONS:

Fibromyalgia was more common in ankylosing spondylitis patients than controls. The coexistence of FM with AS negatively impacts the scores of disease activity and functional status in AS patients.

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