Co-Existence of Fibromyalgia and Radiological Cervical Spine Degeneration: Preliminary Report

Riyadh A. Sakeni MBChB, M.Sc. * **Marwan S.M. Al-Nimer** MBChB, MD, PhD **
Rafid A. Alkhuzuie MBChB, MD, FICMS ***

Abstract

Objectives: The study is aimed to prove that clinical presentation of fibromyalgia is not attributed to the radiological degenerative changes of cervical spine that accompanied it.

Methods: A total number of 89 patients (71 females and 18 males) clinically diagnosed as fibromyalgia with a mean duration of 2 years and 97 healthy subjects (83 females and 14 males) were enrolled in our study at Al-Yarmouk Teaching hospital in Baghdad, Iraq.

Results: Degenerative changes in term of narrowing disc space in absence or presence of spondylophytes were found in 25 (28.1%) and 28 (31%) out of 89 patients compared to 9 (9.3%) and 30 (30.1%) out of 97 healthy subjects respectively. These radiological changes were significantly reported in patients who had family history of fibromyalgia and those with psychosomatic symptoms of irritable bowel syndrome.

Conclusions: We conclude that degenerative changes of cervical spine in patients with fibromyalgia are not related to the age while family history of fibromyalgia is strongly related

Key words: Fibromyalgia, cervical spine, radiological changes

Introduction

Fibromyalgia syndrome is common, affecting 0.5% to 5% of the general population, and is either the second or third most common diagnosis in a rheumatology practice [1].

It is more common in women than in men, affecting 3.4% of women compared with 0.5% of men [2]. Chronic widespread pain is the defining feature of fibromyalgia but patients may also exhibit a range of other symptoms, including sleep disturbance, fatigue, irritable bowel syndrome, headaches, and mood disorders [3,4]. Fibromyalgia is influenced by factors such as stress, medical illness, and a variety of pain conditions and is associated with physical trauma and psychological factors [5]. Less than 3% of chronic pain following trauma is diagnosed as fibromyalgia and although trauma increases the prevalence, most injuries do not lead to symptoms [6].

It is more likely to occur in patients who had a prior injury to the cervical spine compared with those with injuries to the lower extremities [7,8]. Fibromyalgia is one among several disorders that can produce neck and back pain [9]. Not surprisingly, distress-related fibromyalgia syndrome is more common in patients with chronic rheumatic or arthritic diseases, with a frequency ranging from 5% in osteoarthritis to 47% in Sjögren syndrome [10].

When present, fibromyalgia syndrome changes the features of the other disease [10]. Higher percentage of fibromyalgia syndrome was demonstrated in young female patients with myofascial pain syndrome [11]. Systemic rheumatic conditions associated with fibromyalgia include systemic lupus erythematosus, rheumatoid arthritis, polymyositis, and polymyalgia rheumatica [12,13]. There is no diagnostic laboratory or x-ray abnormalities, but the diagnosis can be confirmed by finding tender points in characteristic locations according to the American College of Rheumatology 1990 criteria for the classification of fibromyalgia [14]. Effective management of fibromyalgia is complex and requires a multidisciplinary treatment approach, controlled trials of antidepressants, gabapentinoids, tramadol, zopiclone, sodium oxybate, pregabalin and duloxetine have shown effectiveness in fibromyalgia patients [15].

The aim of our study was to explore the radiological changes in term of degenerative cervical spine in patients with fibromyalgia.

Materials and methods

Our study was conducted at Al-Yarmouk Teaching Hospital in Baghdad, Iraq during 2009. Patients who visited Rheumatology and Rehabilitation Out-patient Clinic, with the complaints of neck, shoulder pain and suspected fibromyalgia were included to the study. The diagnosis of fibromyalgia was made by two rheumatologists experienced in fibromyalgia, through double blind evaluation. The diagnosed of fibromyalgia was made according to the following criteria: wide spread pain in all four quadrants of the body for a minimum of three months, at least 11 of 18 specified tender points when light pressure (by thumb) is applied to the surface of the muscles throughout the body [14].

The 18 sites used for the fibromyalgia diagnosis cluster around the neck, shoulder, chest, hip, knee and elbow regions. Other tender points have been found to exist, but not used for diagnostic purposes. History of fibromyalgia in first relatives of family, duration of illness, headache, fatigue, dizziness, sleep disturbances, and irritable bowel syndrome were obtained from each patient.

A routine laboratory investigations and X-ray of cervical spine were done for each patient. Patients with normal laboratory investigations including complete blood picture, erythrocyte sedimentation rate and negative serological tests were admitted in the study.

Patients having radicular pain, neurologic deficit, disc herniation, fractures, infection, malignant disease, connective tissue disease (e.g.

systemic lupus erythematuos) systemic disease and serious psychosis were excluded. A total number of 89 patients fulfill the above criteria were included in the study. Also 97 healthy subjects recruited from subjects attended the hospital seeking for sick leave (who were asymptomatic and they had no history of fibromyalgia or rheumatic pain) served as control group were included in the study and they subjected to the laboratory investigations and radiological examination as with patients group. Radiological findings of degenerative cervical spine were graded as: normal, narrowing of disc space, and presence of spondylophytes in addition to the narrowing of disc space

Statistical analysis

The results are expressed as number, percentage, range, median, and mean ± SD. The data are analyzed using Chi-squared, differences between percentages and student's "t" tests taking $p \leq 0.05$ as the lowest limit of significance.

Results

A total number of 89 patients (71 females and 18 males) and 97 healthy subjects (83 females and 14 males) were enrolled in the study. The characteristics of the study are shown in table 1.

Both healthy subjects and patients groups are well-matched regarding the gender and age distribution. There were no significant differences between females and males patients regarding age (47.2 ± 10.9 *vs.* 40.4 ± 15.6 years) and the number of tender points (14.6 ± 2.7 *vs.* 13.4 ± 2.9). Precipitating factors in term of grief, loss, fear from war or divorce were reported in 33 (46.5%) females and 8 (44.4%) males.

The frequency of family history of fibromyalgia is significantly ($p < 0.001$) higher in patient group compared with healthy subjects group. Table2. Showed that there was no significant difference between females and males regarding the clinical presentation. Table 3 showed that the frequency of radiological evidence of degenerative changes (narrowing of disc space and presence of spondylophytes) of cervical spine (C5-C7) were significantly ($\chi^2 = 6.9$, df = 1, $p < 0.01$) higher in patients (53 out of 89) than in controls (39 out 97) in healthy subjects. There was no significant difference between patients with radiological evidence of narrowing disc space without spondylophytes and those who had spondylophytes. The odd ratios of patients who had family history of fibromyalgia and features of irritable bowel syndrome and they were at risk of degenerative changes of cervical spine were 2.77 and 3.8

Table 1: The characteristics of the study

	Patients (n=89)	Healthy subjects (n=97)
Gender (Female: Male)		
Age (year)	71 : 18	83:14
Range	18 - 76	18-74
Median	46	42
Mean ± SD	46.0 ± 11.9	42 ± 12.2
Duration of illness (year)		
Range	0.25 – 30	
Median	2	
Mean ± SD	4.93 ± 7.06	
Family history of fibromyalgia	28*	14

* $p < 0.001$ compared with corresponding healthy subjects

Table 2: Clinical presentation

	Female (n=71)	Male (n=18)	Total (n=89)
Tender points (No.)			
Range	11-18	11-18	11-18
Median	15	12	14
Mean ± SD	14.59 ± 2.71	13.44 ± 2.89	14.35 ± 2.77
Pain	71	18	89
Headache	67	16	83
Fatigue	64	17	81
Dizziness	28	11	39
Sleep disturbances	17	5	22
Evidence of irritable bowel syndrome	32	5	37

Table 3: Characteristics of healthy subjects and patients in respect to radiological degenerative changes of cervical spine

	Normal		Narrowing of disc space		Narrowing of disc space and presence of spondylophytes	
	Healthy subjects	Patients	Healthy subjects	Patients	Healthy subjects	Patients
Number	58 (59.8%)	36 (40.4%)*	9 (9.3%)	25 (28.1%)*	30 (30.1%)	28 (31%)
Gender Female: Male	50 : 8	25 :11	9 : 0	21:4	24 : 6	25 : 3
Age (year)	35.6 ± 9.7	35.8 ± 9.6	48.8 ± 6.4	47.4 ± 6.5	52.8 ± 9.4	57.2 ± 7.3
Tender points (No.)	----------	13.9 ± 2.6	----------	14.6 ± 2.9	----------	14.8 ± 2.9
Precipitating factors		13/36 (36.1%)		8/25 (32%)		14/28 (50%)
Family history of fibromyalgia	9/58 (15.5%)	11/36 (30.6%)*	0/9 (0%)	7/25 (28%)**	5/30 (16.6%)	10/28 (35.7%)**
History of irritable bowel syndrome	9/58 (15.5%)	8/36 (22.2%)	2/9 (22.2%)	12/25 (48%)**	5/30 (16.6%)	12/28 (42.9%)**

The results are expressed as percentages and mean ± SD, * $p < 0.01$, ** $p < 0.001$ compared to healthy subjects

Discussion:

Our study shows that degenerative changes of cervical spine are significantly reported in high frequency in patients with fibromyalgia compared to healthy subjects.

Degenerative changes of cervical spine may be related to the fibromyalgia rather than to the ageing process. Okada et al [16] reported that no factor related to progression of degeneration of cervical spine in subjects aged 39.0 ± 15.0 years except for age. In the Okada et al study, the progression of degeneration of cervical spine in term of decrease in signal intensity of disc, anterior compression of dura and spinal cord, posterior disc protrusion, disc space narrowing, and foraminal stenosis on magnetic resonance image was observed during 10-year follow-up period. Moreover, Liu et al [17] analyzed 200 cases of degenerative cervical disease with oblique radiography, and found 90% of them, who were elderly, have different levels of facet degeneration.

The reasons for cervical facet degeneration were physiological degeneration of the articular process, acute and chronic injuries, especially whiplash injury, and iatrogenic injury. The results of our study highlighted two important observations. First, patients with fibromyalgia are more likely to have degenerative changes spine, and this may alter their clinical presentations.

The age of patients with radiological changes of cervical spine degeneration in presence of fibromyalgia were similar to those without fibromyalgia as reported by other authors [18,19]. Therefore X-ray of cervical spines is recommended for patients with fibromyalgia and the presence of degenerative changes does not exclude the fibromyalgia illness. Second, patients with family history of fibromyalgia or had features of irritable bowel syndrome are more prone to degenerative changes of their spines while the precipitating factors or the number of tender points are not related to the co-existence of degenerative changes. Therefore, radiological screening of cervical spine is recommended in the familial cluster of fibromyalgia. One of the limitations of this study is to investigate the pattern of clinical presentation at the time of developing degenerative changes in order to identify the clinical marker for this association.

We conclude that degenerative changes of cervical spine in patients with fibromyalgia are not related to the age while family history of fibromyalgia and the associated psychosomatic illness of irritable bowel syndrome are related. We recommend a further prospective study to elucidate the early changes in cervical spine at the onset of fibromyalgia.

References

1. Gran JT. The epidemiology of chronic generalized musculoskeletal pain. Best Pract Res Clin Rheumatol 2003; 17: 547–61.
2. Wolfe F, Ross K, Anderson J, Russell IJ, Hebert L.The prevalence and characteristics of fibromyalgia in the general population. Arthritis Rheum 1995; 38: 19-28
3. Bradley LA. Pathophysiologic mechanisms of fibromyalgia and its related disorders. J Clin Psychiatry. 2008;69 (Suppl 2): 6-13.
4. Zoppi M, Maresca M. Symptoms accompanying fibromyalgia. Reumatismo. 2008;60: 217-20.
5. Cassisi G, Sarzi-Puttini P, Alciati A, Casale R, Bazzichi L, Carignola R, et al. Italian Fibromyalgia Network. Symptoms and signs in fibromyalgia syndrome. Reumatismo. 2008;(60 Suppl 1):15-24.
6. Bennet RM.Emerging concepts in the neurobiology of chronic pain: Evidence of abnormal sensory processing in fibromyalgia. Mayo Clinic proceeding 1999; 74:385-89.
7. Buskila D, Neumann L, Vaisberg G, Alkalay D, Wolfe F. Increased rates of fibromyalgia following cervical spine injury. A controlled study of 161 cases of traumatic injury. Arthritis Rheum. 1997;40: 446-52.
8. Al-Allaf AW, Dunbar KL, Hallum NS, Nosratzadeh B, Templeton KD, Pullar T. A case-control study examining the role of physical trauma in the onset of fibromyalgia syndrome. Rheumatology (Oxford). 2002;41:450-53.
9. Meleger AL, Krivickas LS. Neck and back pain: musculoskeletal disorders. Neurol Clin. 2007;25:419-38.
10. Wilke WS. The clinical utility of fibromyalgia. J Clin Rheumatol 1999; 5: 97–103
11. Sahin N, Karataş O, Ozkaya M, Cakmak A, Berker E. Demographics features, clinical findings and functional status in a group of subjects with cervical myofascial pain syndrome. Agri. 2008;20:14-19
12. Wolfe F, Petri M, Alarcón GS, Goldman J, Chakravarty EF, Katz RS, et al. Fibromyalgia, systemic lupus erythematosus (SLE), and evaluation of SLE activity. J Rheumatol. 2009; 36:82-88.
13. Wermelinger F. Polymyalgia rheumatica--fibromyalgia-syndrome: symptoms, syndromes or diseases? Ther Umsch. 2006;63:195-200.
14. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL, et al. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia: report of the multicenter criteria committee. Arthritis Rheum 1990;33:160-172.
15. Sumpton JE, Moulin DE. Fibromyalgia: presentation and management with a focus on pharmacological treatment. Pain Res Manag. 2008;13(6):477-83.
16. Okada E, Matsumoto M, Ichihara D, Chiba K, Toyama Y, Fujiwara H, et al. Aging of the cervical spine in healthy volunteers: a 10-year longitudinal magnetic resonance imaging study. Spine. 2009; 34:706-12.
17. Liu XN, Han MJ, Wang TG, Wang YK, Wang ZH, Zou JW. Study on clinical characteristics and rehabilitative treatment for degeneration of cervical articular process. Zhongguo Gu Shang. 2008;21:438-40.
18. Master DL, Eubanks JD, Ahn NU. Prevalence of concurrent lumbar and cervical arthrosis: an anatomic study of cadaveric specimens. Spine 2009;34: E272-5
19. Manchikanti L, Manchikanti KN, Cash KA, Singh V, Giordano J. Age-related prevalence of facet-joint involvement in chronic neck and low back pain. Pain Physician 2008; 11:67-75.

* Professor of Rheumatology Department of Medicine- College of Medicine - Al-Mustansiriya University - P.O. Box 14132-Baghdad, Iraq - E-mail: riyadh_alsakeni@yahoo.com

** Professor of Pharmacology, Department of Pharmacology, College of Medicine - Al-Mustansiriya University - P.O. Box 14132, Baghdad, Iraq

*** Senior lecturer in Medicine, Department of Medicine, College of Medicine - Al-Mustansiriya University, P.O. Box 14132, Baghdad, Iraq

** Dept. of Medicine/Rheumatology Al-Mustansiriya College of Medicine.*

*** Dept. of Medicine Al-Mustansiriya College of Medicine.*

**** Dept. of Pharmacology Al-Mustansiriya College of Medicine.*