Fibromyalgia Syndrome in Chronic Obstructive Pulmonary Disease

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Fac Med Baghdad 2009; Vol.51, No1
Received Nov., 2008
Accepted Dec.,2008

Summary:

Background: Fibromyalgia syndrome is a common rheumatological syndrome with multiple systemic manifestations & associated with many diseases. The aim of the study is to assess the possible association between fibromyalgia syndrome (FMS) & chronic obstructive pulmonary disease (COPD), and to correlate this association with patient's age, age group, sex, marital status, duration of the disease, & its severity.

Patients and Methods: Fifty patients with COPD & 50 healthy controls were included in this study. Full history was taken & complete physical examination was done for all patients in both groups. Disease characteristics [age, age group, sex, marital status, duration of the disease, & severity of COPD) were also documented. Pulmonary function tests and chest-X-ray were evaluated for all patients. The American College of Rheumatology (ACR) 1990 Criteria for the classification of FMS were applied to all patients & controls included in this study for diagnosis of FMS.

Results: Four (8%) patients with COPD have FMS compared with 3(6%) controls (p=0.695). Also FMS was reported in 3 (16.7%) female patients with COPD compared with 1 (3.1%) male patient with COPD (p=0.04). There was no statistical significant association between FMS and: patient's age, age group, marital status, duration of the disease, & disease severity (p=0.816, p=0.481, p=0.702, p=0.178, p=0.181) respectively.

Conclusions: FMS is more common in COPD patients compared to controls, but no statistical significant association between them. There was a statistical significant association between FMS & patient's sex only.

Key words: COPD, FMS

Introduction:

Fibromyalgia is a very common syndrome (1, 2). It's the most common cause of widespread pain & tenderness (3), with a familial aggregation (4).

Chronic obstructive pulmonary disease (COPD) is a chronic slowly progressive disorder characterized by airflow obstruction which doesn't change markedly over several months (5), not fully reversible (6), & considered a major cause of morbidity & mortality (7). Musculoskeletal factor is one of several factors that limit exercise capacity of patients with COPD (8). The purpose of this study is to assess the possible association between fibromyalgia syndrome (FMS) & COPD, and to correlate this association with patients' age, sex, age group, duration of the disease, & its severity.

Patients and Methods:

A cross-sectional study was conducted on 50 patients with COPD who were seen at the Respiratory Unit, Department of Medicine in Baghdad Teaching Hospital from 1st of June to 31st of December 2007.The demographic features of the patients like: age, sex, occupation, marital status & addresses were recorded.

Full history was taken, complete physical examination was done, pulmonary function tests (PFTs) were studied. Patients included in this study only if they had forced expiratory volume in 1 second(FEV1)/ vital capacity(VC) ratio< 70%. For comparative purposes, 50 healthy control individuals matched for age & sex were selected from healthy individuals that didn't have symptoms of COPD & were not taking any medications.

All patients with COPD were classified according to their severity (9).The American College of Rheumatology ACR 1990 Criteria for Classification of FMS (10) were applied to all COPD patients & controls.

Patients were excluded from the study if they had: rheumatologic disorders like systemic lupus erythematosus, rheumatoid arthritis,Sjogren's syndrome, osteoarthritis, polymyalgia rheumatica, regional pain syndrome, osteomalacia, & hypermobility syndrome; neurological disorders including multiple sclerosis, myasthenia gravis, cervical radiculopathy, &metabolic myopathy; chronic infections including subacute bacterial endocarditis, brucellosis, hepatitis C virus, human immune deficiency virus, endocrine disorders including hypothyroidism, Cushing's syndrome, non insulin dependent diabetes mellitus, & hyperparathyroidism; neoplastic disorders including myeloma, metastatic breast, lung, and prostate

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cancer; & medications including statines, fibrates, antimalarials, & steroid tapering(11) .

Pulmonary function tests (PFTs): FEV1, VC, FEV1/VC ratio; chest X-rays, & cervical X-rays were done. Blood sample was obtained for measurement of hemoglobin, white blood cells, platelets, erythrocyte sedimentation rate, blood sugar , blood urea, serum creatinine, electrolytes, and thyroid stimulating hormone.A signed consent was taken from all individuals in both groups. Ethical approval was obtained from the Ethics Committee of Baghdad University, College of Medicine, Medical Department. All data coded & entered to the computer using statistical package for social science (SPSS 14). Association between discrete variables measured by Chi-Square test, difference between continuous variables measured by t-test. P-value ≤0.05 was considered significant.

Results:

Fifty patients with COPD, 31males (49.2%) &19 females(51.4%), their mean age(57.94±7.15) years, and 50 healthy control group, 32 males (50.8%) & 18 females(48.6%), their mean age was (58.30±7.20) years were included in this study. The age & sex of patients & control groups are shown in Table1 (p-value=0.803 and 0.836) respectively indicating no statistical significant difference between both groups. Fibromyalgia syndrome was reported in 4(8%) of 50 COPD patients compared to 3(6%) of 50 healthy controls (p-value=0.695) indicating no statistical significant difference between both groups as shown in Table2.

Also FMS was reported in 3(16.7%) of 18 female COPD patients compared to 1(3.1%) of 32 male COPD patients (p-value=0.04) indicating statistical significant association between FMS & patients sex as shown in Table3. We found that there was no statistical significant association between FMS & COPD patients' characteristics (age, duration of the disease, & disease severity) as shown in Table 3.

Table 1: Distribution of the studied sample according to demographic characteristics

Variables	Patients=50	Controls=50	p-value
Age(years)	57.94±7.15	58.30±7.20	0.803$^{n.s}$
Sex Male n.(%) Female n.(%)	31(49.2) 19(51.4)	32(50.8) 18(48.6)	0.836$^{n.s}$

: n.s, not significant; n., number; %, percentile

Table 2: Comparison of FMS in 50 COPD patients and 50 controls

Groups	FMS positive n(%)	FMS negative n(%	p-value
Patients n=50	4(8)	46(92)	0.695$^{n.s}$
Controls n=50	3(6)	47(94)	

FMS, fibromyalgia syndrome; n, number; %, percentile; n.s, not significant.

Table 3: Association of FMS with 50 COPD patients characteristics.

Variables	FMS Positive	FMS Negative	p-value
Age n(years)	4(58.75±7.18)	6(57.86±7.22)	0.816
Sex Male n.(%) Female n.9%)	1(3.1) 3(16.7)	31(96.9) 5(83.3)	* 0.04
Duration n(years)	4(9± 8.08)	46(4.89±5.57)	0.178
Severity Mild n(%) Moderate n(%) Severe n(%)	0(0) 2(14.3) 2(14.3)	22(100) 12(85.7) 12(85.7)	0.181

* P-value is significant; FMS, fibromyalgia syndrome; n, number; %, percentile.

Discussion:

The association between FMS & COPD has not been reported to date in controlled study. The pathogenesis of FMS could be genetic factors, environmental factors, abnormality in pain & sensory processing, hypothalamic-pituitary& autonomic dysfunction, and psychological & social factors (3) . In this study, the prevalence of FMS was observed in 8% of COPD patients which is comparable to the prevalence of FMS in asthmatic patients (12). It is lower in comparison to its prevalence in other diseases. FMS was reported in 17% of patients with diabetes mellitus (13); 30% of patients with systemic lupus erythematosus (14); and 25% of patients with rheumatoid arthritis (15), but it is comparable to the prevalence rate of FMS in Iraqi patients with Behcet's disease(8.9%) (16). Also the prevalence rate of FMS in COPD is more than general population which is reported as 0.5-5% (1).The controls in this study show a prevalence rate of 6% which is not significantly different from the 8% prevalence rate of FMS among COPD patients, this may be explained by the small number of patients & controls in this study.In this study, FMS is more prevalent in female patients with COPD (16.7%) compared to male patients (3.1%) which is also comparable to the female to male ratio (6.5:1) in asthmatic patients who have FMS (12). The present study showed that there was no statistical significant association between FMS & patient's age which agreed with other study (12). In addition to that, no significant association between FMS and duration & severity of COPD which contrasted other study (12), this also may be explained by the small number of patients included in this study. Many hypothesis might explain the relationship between FMS and COPD: (i)Presence of sleep disturbance in COPD leads to frequent awakening, early awakening & non restorative sleep which is a preceding and pathogenic factor the development of FMS & have been suggested as early feature of the syndrome (17). (ii) Kinine release which is a potent bronchoconstrictor & one of pain mediators(18). (iii)

Stress & psychological factors might possibly release proinflammatory cytokines & trigger FMS (19). (iv) Potential role of genetics & strong familial risks in COPD & FMS (4-6)**.** The above mechanisms are important in management of both FMS & COPD patient. Education, stress management, and aerobic exercises can help the patients with FMS & COPD to cope with their symptoms & to improve their life quality (6**,**20). Finally further studies with large number of patients to look for the cause & relationship of the two relatively common conditions in the community are suggested.

Conclusion:

FMS is more common in COPD patients compared to controls, but no statistical significant association between them. There was a statistical significant association between FMS & patient's sex only.

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