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Prevalence of Depression in Iraqi Patients with Systemic Sclerosis and Its Relationship with Disease Severity

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ABSTRACT

Objectives: *To evaluate the prevalence of major depression disorder in Iraqi patients with systemic sclerosis (SSc) and its relationship with disease severity.* ***Patients and methods:*** *This case-control study involved 50 patients who have SSc according to the criteria developed by the 2013 American College of Rheumatology/European League Against Rheumatism. Demographics and clinical data was collected based on different variables. Disease severity for SSc was assessed with the scleroderma assessment questionnaire (SAQ). Medications used, and autoantibody profile were recorded. Depression was diagnosed using Diagnostic and Statistical Manual of Mental Disorders-5 (DSM5).* ***Results:*** *The prevalence of major depression disorder was 44% compared to control 2.0%, in which major depression disorder 39.3 folds associated with SSc patients compared to control. Furthermore, cases with a severe form of disease evaluated by SAQ had higher rate of depression. The major depression disorder was significantly correlated with smoking. SSc cases with higher education (college) had the highest rate of major depression disorder (36.4%) compared to a rate between 13.6% and 27.3% for lower level of educational attainment. The risk of having major depression disorder was not different in variables and had no obvious or statistically significant association with major depression disorder. The presence of autoantibodies (anti centromere and anti Scl70 antibodies) had no important or statistically significant effect on the presence of major depression disorder.* ***Conclusions:*** *The prevalence of major depression disorder in SSc patients was significantly higher in patients than in controls. SSc disease severity increase major depression disorder rate.*

Keywords: Depression, Systemic sclerosis, Severity of systemic sclerosis, Connective tissue disease

INTRODUCTION

Systemic sclerosis (SSc) is a rare autoimmune connective tissue disorder characterized by thickening and fibrosis of the skin and involvement of internal organs with significant increase in morbidity and mortality [1-3]. Patients with SSc are at risk of depression because of the disabling, disfiguring, painful course of disease [4]. Depression is a common psychiatric disorder characterized by low mood and aversion to activity that can affect a person's thoughts, behavior, feelings, and sense of well-being [5,6].

Between 36% and 65% of patients with systemic sclerosis (SSc), symptoms of depression have been reported above cut-off thresholds on self-report questionnaires, which is a high rate even when compared with patients who have other chronic diseases when the same assessment instruments and cut-off scores are used [7]. Accurate assessment of depressive symptoms requires screening questionnaire scores to reflect depressive symptomatology rather than physical symptoms of SSc that are not directly related to depression [8]. Depression leads to poor compliance to advised treatment of SSc, so early diagnosis and appropriate intervention of depression in SSc through integrated multidisciplinary team approach is more likely to improve the global outcome of illness [9]. Up to the best of our knowledge, there are no previous reports about prevalence of depression in Iraqi patients with SSc.

PATIENTS AND METHODS

Study Design

This was an analytic cross-sectional study conducted at the Rheumatology Unit, Department of Medicine in Baghdad Teaching Hospital from October 2016 to March 2017. It evaluated prevalence and predictors of depression in SSc. Ethical approval was taken from medical department in Baghdad Teaching Hospital and College of Medicine and informed consent was taken from all participants in the study.

Inclusion Criteria

A total of 50 consecutive patients were included in the study. They were diagnosed to have SSc according to the criteria developed by the 2013 American College of Rheumatology/European League Against Rheumatism for the classification of systemic sclerosis and compared with another 51 healthy controls matched in age and sex [10].

Exclusion Criteria

Patients were excluded if they had another overlapping inflammatory, connective tissue disease, another chronic illness, history of mental illness, history of substance use and alcohol intake that may be a confounder for depression.

Data Collection and Evaluation

All patients and controls were asked for their ages, smoking status, marital status employment status, educational status, and crowding index. We measured body mass index (BMI) according the equation BMI= kg/m^2, where kg is a person's weight in kilograms and m^2 is their height in metres squared and data related to scleroderma including disease duration, disease subtype, scleroderma assessment questionnaire (SAQ), medications were used. Blood investigations were measured in form of anti-scleroderma 70 (AntiScl70), and anticentromere antibody.

Outcome Measurement

Depression was measured using Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) diagnostic criteria to all subjects included in study in isolated room for about 20 minutes [11]. At first, semi-structure interview was done depending on DSM-5 criteria for depressive disorders and then distributed to five experts for further evaluation, translation to Arabic and back translation was also done with correlation coefficients above 85%.

Statistical Analysis

Anderson-Darling test was done to assess normal distribution of continuous variables. Independent t-test was used to analyze the difference in means of normally distributed continuous variables. Discrete variables were presented as numbers and percentages. Chi-square test was used to measure the difference between two categorical variables.

Binary logistic regression analysis was used to find the correlation between demographic and clinical features with depression. Statistical software SPSS version 20 was used to perform the statistical analysis ($p<0.05$) was considered statistically significant.

RESULTS

Age, BMI, sex, marital status, and employment were not statistically different between control and patients. Smoking was significantly higher in control (17.6% vs. 2.0%), crowding index with value ≥ 4 associated significantly with patients compared to control (86.0% vs. 62.7%), higher education levels associated significantly with the control compared to patients, as illustrated in Table 1.

Table 1 Baseline characteristics of patients and controls

Variables	Controls	Patients	p-value
Number	51	50	-
Age (years), mean ± SD	33.5 ± 5.4	36.8 ± 11.4	0.06
BMI (kg/m^2), mean ± SD	23.2 ± 1.9	22.7 ± 3.4	0.059
Sex, N (%)			
Female	37 (72.5%)	40 (80.0%)	0.379
Male	14 (27.5%)	10 (20.0%)	

Marital status, N (%)			
Divorced	2 (3.9%)	2 (4.0%)	0.189
Married	38 (74.5%)	29 (58.0%)	
Single	11 (21.6%)	19 (38.0%)	
Disease duration (months), median (IQR)	-	24 (12-51)	-
Disease subtype	-	-	-
Limited	-	30 (60.0%)	-
Diffuse	-	20 (40.0%)	-
SAQ, median (IQR)	-	7 (4-16.25)	-
Use of DMARD, N (%)	-	34 (68%)	-
Use of biological agents, N (%)	-	6 (12%)	-
Use of steroids, N (%)	-	20 (40%)	-
Anti-sclera 70 Ab positive, N (%)	-	27 (54%)	-
Anti-centromere Ab positive, N (%)	-	20 (40%)	-
BMI: Body Mass Index; IQR: Interquartile Range; SAQ: Scleroderma Assessment Questionnaire; DMARD: Disease Modifying Antirheumatic Drugs; SD: Standard Deviation			

Prevalence of major depression disorder in patients was significantly higher (44%) compared to control (2.0%), in which major depression disorder 39.3 folds associated with SSc patients compared to control as illustrated in Table 2.

Table 2 Prevalence of major depression disorder in SSc and controls

Variables	Controls	Patients	p-value	OR (95%CI)
Number	51	50	<0.001	39.286 (5.024-307.225)
Depression	-	-		
No depression	50 (98.0%)	28 (56.0%)		
Depression	1 (2.0%)	22 (44.0%)		
OR: Odds Ratio; CI: Confidence Interval				

Higher SAQ and smoking is significantly correlated with major depression disorder in SSc patients, and diffusion of subtype disease is weakly associated with major depression disorder as illustrated in Table 3.

Table 3 Logistic regression analysis to find correlation between demographic and clinical features with major depression disorder in SSc

Variables	OR (95%CI)	P-value
Age	1.025 (0.974-1.078)	0.344
BMI	1.196 (0.996-1.435)	0.061
Disease duration	1.009 (0.994-1.025)	0.234
SAQ	1.117 (1.020-1.223)	0.017
Sex		
Male	1.227 (0.300-5.028)	0.776
Female	-	
Disease subtype (diffuse)	3.0 (0.928-9.697)	0.066
Smoking		
Yes	NA	0.002
No	-	-
Marital status		
Divorced	Reference	0.728
Married	1.714 (0.092-31.924)	0.718
Single	1.6 (0.49-5.222)	0.436
Unemployment	0.867 (0.283-2.651)	0.802
Education level		

No formal education (illiterate/read and write)	Reference	0.982
Primary	0.844 (0.143-4.974)	0.851
Secondary	0.937 (0.205-4.294)	0.934
College/higher education	0.750 (0.184-3.057)	0.688
Crowding Index (≥4)	2.174 (0.379-12.459)	0.383
Use DMARD	2.2 (0.629-7.7)	0.217
Use biological agents	0.6 (0.099-3.623)	0.578
Use of steroid	0.762 (0.242-2.398)	0.642
BMI: Body Mass Index; SAQ: Scleroderma Assessment Questionnaire; DMARD: Disease Modifying Antirheumatic Drugs		

DISCUSSION

The purpose of this study was to evaluate the prevalence of major depression disorder in Iraqi patients with systemic sclerosis and revealed that the major depression disorder in patients was significantly higher (44%) compared to control (2.0%) and SSc increases the risk of depression by 39.3 folds compared to controls. This finding is close to the results of Nguyen, et al., study which found prevalence of major depression disorder was (40.4%) [12], also results are like Beretta, et al., study which reported that major depression disorder prevalence in SSc was 46% [13]. And this finding is comparable with Matsuura, et al., in which major depression disorder was present in up to 56% of patients [14].

The high prevalence of major depression disorder in patients with SSc may be related to the high levels of pain, fatigue, disability, disfigurement and substantially impaired overall physical function which are often refractory to treatment [15]. Another observation of note is that the prevalence of major depression disorder showed a negative association with disease duration which is not expected. It contrasts with some studies which found that longer disease duration increases vulnerability for clinical major depression disorder in SSc [16]. This can be related to difference in demographic features of the study populations, and small sample size of our study.

While the same studies were comparable with our study finding regarding the increase in disease severity associated with increase prevalence of major depression disorder [17], as cases with a severe form of disease had an obviously higher rate of major depression disorder compared to those with mild or moderate form of SSc disease. Other studies did not find link with indices of disease severity or disease duration [18].

In the current study, we observed that major depression disorder in diffuse SSc more than limited form. In contrast to other studies which reported that diffuse and limited SSc were not significantly associated with major depression disorder [12,19]. Possible explanation of this difference may be related to difference in sample size. In the present study the risk of having major depression disorder was significantly correlated with smoking. And this finding is comparable with Farrell, et al., study which reported a positive association between smoking and mental illness [19]. In our study, age and gender had no obvious or statistically significant association with major depression disorder which was like Thombs, et al., study that reported no significant association between age and gender with major depression [20].

In this study, education and marital status had no obvious or statistically significant association with major depression disorder. However, SSc cases with higher education (college) had the highest rate of major depression disorder (36.4%) compared to a rate between 13.6% and 27.3% for lower level of educational attainment. While previous study of Thombs, et al., found that patients with less education and patients who were not married had significantly higher symptoms of major depression disorder [20]. Possible explanation of this difference may be related to small sample size of our study.

In the current study, crowding index, BMI and employment status had no obvious or statistically significant association with major depression disorder. In fact, no such association is present in previous studies to compare with our study. In this study, patient using DMARD, cytotoxic drugs and prednisolone had no important or statistically significant association with major depression disorder, while previous study found a dose-dependent relationship related to prednisolone use and they found that neuropsychiatric symptoms associated with the use of corticosteroids resolve with discontinuation of the medication [21]. The possible explanation may be related to relatively small steroid doses used by the patients included in our study. Additionally, we did not find important or statistically significant effect of autoantibodies (anti centromere and anti Scl70 antibodies) on the presence of major depression disorder. Surprisingly, no previous studies support or are against our results.

CONCLUSION

Prevalence of major depression disorder among SSc patients was significantly high compared to controls. Prevalence of major depression disorder increase with the disease severity. This suggest that early and frequent screening of depression for patients with SSc to early diagnose and treat the major depression disorder and to prevent complications.

Limitations

A limitation of this study is small sample size, short period of the study, and rare disease. Larger sample size and longer disease duration study may solve this to further validate the findings of this study.

DECLARATIONS

Conflict of Interest

The authors have disclosed no conflict of interest, financial or otherwise.

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